

# Global Economic Outlook

———— May 2023



<b>I. Introduction</b>	<b>2</b>
<b>II. Economic outlook in selected territories</b>	<b>3</b>
II.1 Euro area	3
II.2 Germany	4
II.3 United States	5
II.4 China	6
II.5 United Kingdom	7
II.6 Japan	7
II.7 Russia	8
II.8 Poland	8
II.9 Hungary	9
<b>III. Leading indicators and outlook of exchange rates</b>	<b>10</b>
<b>IV. Commodity market developments</b>	<b>11</b>
IV.1 Oil	11
IV.2 Other commodities	12
<b>V. Focus...</b>	<b>13</b>
European natural gas market during the energy crisis	13
<b>A. Annexes</b>	<b>19</b>
A1. Change in predictions for 2023	19
A2. Change in predictions for 2024	19
A3. GDP growth and inflation outlooks in the euro area countries	20
A4. GDP growth and inflation in the individual euro area countries	20
A5. GDP growth and inflation in other selected countries	27
A6. List of abbreviations	28

#### Cut-off date for data

12 May 2023

#### CF survey date

9 May 2023

#### GEO publication date

19 May 2023

#### Notes to charts

ECB, Fed, BoE and BoJ: midpoint of the range of forecasts.

The arrows in the GDP and inflation outlooks indicate the direction of revisions compared to the last GEO. If no arrow is shown, no new forecast is available. Asterisks indicate first published forecasts for given year. Historical data are taken from CF, with exception of MT and LU, for which they come from EIU.

Leading indicators are taken from Bloomberg and Refinitiv Datastream.

Forecasts for EURIBOR and LIBOR rates are based on implied rates from interbank market yield curve (FRA rates are used from 4M to 15M and adjusted IRS rates for longer horizons). Forecasts for German and US government bond yields (10Y Bund and 10Y Treasury) are taken from CF.

#### Contact

gev@cnb.cz

#### Authors

<b>Luboš Komárek</b>	Editor-in-chief, I. Introduction
<b>Petr Polák</b>	Editor, II.3 United States
<b>Pavla Růžicková</b>	II.1 Euro area
<b>Michaela Ryšavá</b>	II.2 Germany, II.5 United Kingdom
<b>Alexis Derviz</b>	II.4 China
<b>Martin Kábrt</b>	II.6 Japan
<b>Oxana Babecká</b>	II.7 Russia
<b>Anna Drahozalová</b>	II.8 Poland, II.9 Hungary
<b>Jan Hošek</b>	IV.1 Oil, IV.2 Other commodities, V. Focus

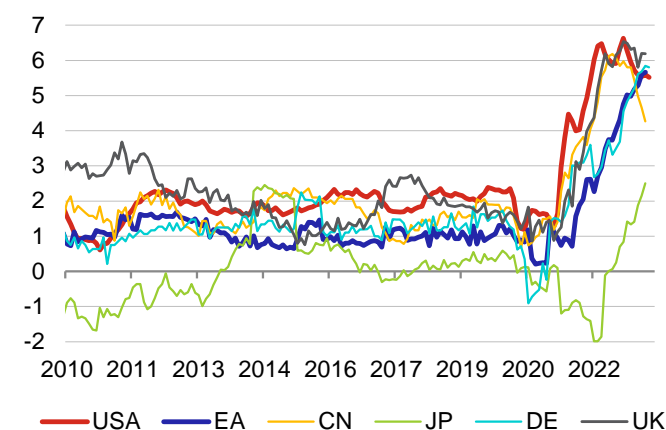
## I. Introduction

**The West's alliance with Ukraine is steadfast and strong.** Germany has announced it will provide a huge EUR 2.7 billion military aid package to Ukraine, containing an air defence system, armoured vehicles, drones and the long-debated Leopard tanks. Other countries are also trying to help Ukraine, especially those in close geographical proximity to the conflict. The highest amount of aid to Ukraine has long been provided by the USA, which has delivered or promised military aid totalling more than USD 32 billion since the start of the Russian invasion. However, the majority of NATO member states will not spend the required 2% of their budget on defence in 2023 (only seven countries – the USA, Greece, the Baltic economies, the UK and Poland – did so last year) despite being one step closer to this goal again. Turkey, which maintains relations with both sides, is holding presidential elections, whose outcome will indicate the direction the country will take.

**Inflation is still very far from the 2% ideal**, although we can already see some signs that the inflation wave is subsiding. This is due both to a drop in commodity prices, including most food commodities, on the supply side and the effects of a cooling of demand by central banks' restrictive policy. However, firms' profitability (particularly in the euro area) has not yet been limited much, wage pressures are not easing fundamentally and there has not yet been any actual post-covid fiscal consolidation (all the more painful because of compliance with the above defence commitments).

**The key central banks tightened their monetary policy again at the start of May** due to a slower disinflation process and high and persisting core inflation levels. The Fed, the ECB and the BoE all raised their monetary policy rates by 0.25 pp at the start of May. Rates are the highest in the USA (5.25%) – their highest level since 2007. The ECB raised its rates to 3.75% while announcing that it would discontinue reinvestments under the APP as of July. The BoE continued with its series of gradual rate increases, raising rates for the twelfth time in a row (to 4.5%). The BoJ still keeps its rates unchanged (-0.1%). However, it is flirting with the idea of ending its yield curve control policy and is also considering reducing the size of its balance sheet.

Core inflation in selected world economies, %



Source: Refinitiv Datastream

**The chart in the current issue shows** core inflation, i.e. a view of price growth which is more focused on consumer demand and less on difficulties on food markets or problems with shortages of energy commodities. The roots of the current inflation, initially driven mainly by energy prices, are obviously deeper. In some countries, core inflation has not yet peaked, let alone started to fall. This, too, is probably the motive for the hawkish policy and communications of many central banks.

**The current issue also contains an analysis:** [“European natural gas market during the energy crisis”](#). The article summarises the developments on the natural gas market over the last two years and states that EU countries got through the 2022/23 winter without major problems thanks to massive savings and good weather. In the absence of supplies from Russia, however, the European market will remain tight in the years ahead.

### GEO barometer for selected countries

		EA	DE	US	UK	JP	CN	RU
<b>GDP</b> (%)	<b>2023</b>	0.7 ➡	0.1 ➡	1.1 ➡	-0.1 ➡	1.0 ➡	5.8 ➡	-0.9 ➡
	<b>2024</b>	0.9 ➡	1.1 ➡	0.6 ➡	0.8 ➡	1.1 ➡	4.9 ➡	1.3 ➡
<b>Inflation</b> (%)	<b>2023</b>	5.5 ➡	6.2 ➡	4.2 ➡	6.7 ➡	2.6 ➡	1.8 ➡	5.7 ➡
	<b>2024</b>	2.4 ➡	2.7 ➡	2.6 ➡	2.8 ➡	1.4 ➡	2.4 ➡	4.7 ➡
<b>Unemployment</b> (%)	<b>2023</b>	6.8 ➡	5.5 ➡	3.8 ➡	4.1 ➡	2.5 ➡	3.5 ➡	3.5 ➡
	<b>2024</b>	6.9 ➡	5.5 ➡	4.6 ➡	4.1 ➡	2.4 ➡	3.4 ➡	3.6 ➡
<b>Exchange rate</b> (against USD)	<b>2023</b>	1.12 ➡	1.12 ➡		1.26 ➡	126.3 ➡	6.72 ➡	80.1 ➡
	<b>2024</b>	1.14 ➡	1.14 ➡		1.30 ➡	121.6 ➡	6.58 ➡	81.2 ➡

Source: Consensus Forecasts (CF)

Note: The arrows indicate the direction of the revisions compared with the last GEO.

## II.1 Euro area

**The euro area's economic performance has frozen at last summer's level.** According to a preliminary estimate, gross domestic product grew by just 0.1% in 2023 Q1 (after stagnating a quarter earlier). Year-on-year growth slowed to 1.3%. Among the large economies, Italy and Spain fared best (0.5% quarter-on-quarter growth in both countries), while the German economy was flat. The decline in real retail sales strengthened (to -1.2% month on month) in March but were almost 4% lower year on year. This was due to high prices (mainly food) and rising interest rates. Both factors are forcing consumers to think twice about their purchases. In April, however, consumer sentiment as measured by the ESI improved slightly, giving hope for Q2. Sentiment in services improved further but worsened again in industry. Overall economic sentiment is gradually improving according to the ESI. By contrast, the ZEW index worsened due to uncertain inflation, economic growth and interest rate outlooks. The composite PMI indicates a cautious restart of euro area economic activity in the next quarter, which will be fuelled mainly by services that will more than offset the continued slight decline in industry. The economy is projected to grow by just 0.7% in 2023 as a whole. Only a slight pick-up in growth is now expected next year. The output gap will thus remain distinctly negative next year. However, this could help cool inflation pressures.

**Inflation has been easing only very reluctantly so far.** According to a flash estimate, consumer prices in the euro area rose by 7.0% year on year in April. This represents a slight acceleration of inflation (due mainly to faster growth in energy prices). Month-on-month growth in the HICP slowed to 0.7%, which is still high. An important fact is that core inflation has finally edged down (to 5.6% year on year). Industrial producer price inflation is slowing much faster, with the PPI falling month on month for the third month in a row. A drop in inflation expectations is also good news. The ECB raised its key interest rates by just 0.25 pp to 3.75% at its meeting in May. It announced that it would end the reinvestment of proceeds from maturing securities under the APP as of July. The CF one-year inflation outlooks were unchanged this month.

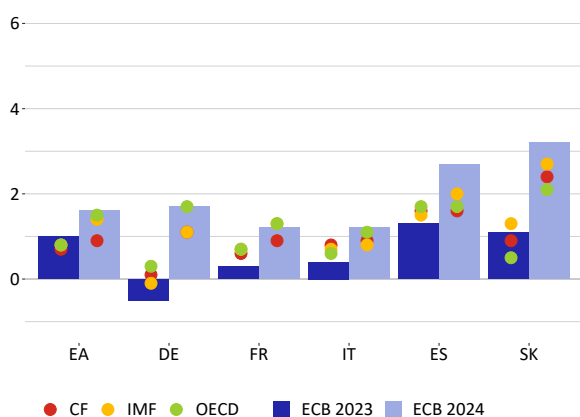


## II.2 Germany

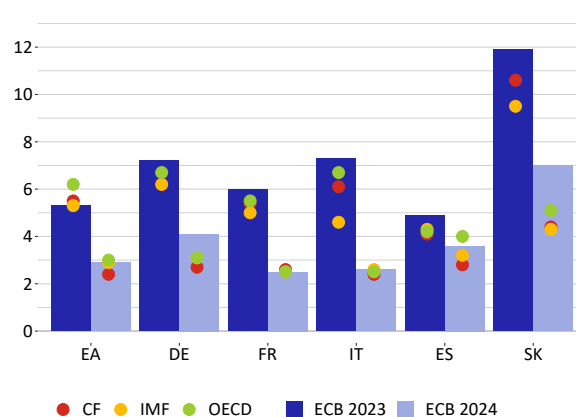
**The German economy stagnated in 2023 Q1, thus dodging a recession.** According to preliminary data, GDP was unchanged in quarter-on-quarter terms following a drop of 0.5% in 2022 Q4. Household and government expenditure on final consumption decreased at the start of this year. However, this drop was offset by strong investment and exports. Newly arrived data from the economy, however, are not encouraging. In March, industrial production recorded the largest drop in the past year (3.4%). New factory orders, retail sales and exports also fell sharply. These data are increasing the likelihood of GDP growth in Q1 being revised downwards, which would mean the German economy slipping into recession. In its new forecast, CF left its outlook for GDP growth this year at almost zero (0.1%) and continues to work with German economic growth of more than 1% next year. The composite PMI rose from 52.6 in March to 54.2 in April, with growth in German business activity thus reaching a 12-month high. This was a result of further strong growth in the services sector (56.0 as against 53.7 in March), while manufacturing continues to fall (44.5 as against 44.7 in March). According to the ZEW and Ifo indices, business sentiment has been relatively resilient so far. However, the German economy is very far from growth. Consumer sentiment as measured by the GfK index continues to pick up, reaching the highest level in the past year.

**Annual inflation slowed slightly again in April, reaching the lowest level in more than a year.** HICP inflation reached 7.6% (as against 7.8% in March) but remains high due to further above-average growth in food prices. Moreover, growth in energy prices accelerated again following a slowdown in March. In month-on-month terms, prices rose by 0.6%. Core inflation adjusted for energy and food prices continues to indicate high inflation in other product categories as well. The new CF inflation outlooks are little changed. They expect inflation to slightly exceed 6% again this year and stay below 3% in 2024. Annual growth in industrial producer prices is slowing markedly. It reached 7.5% in March and was thus around half of February's 15.8%.

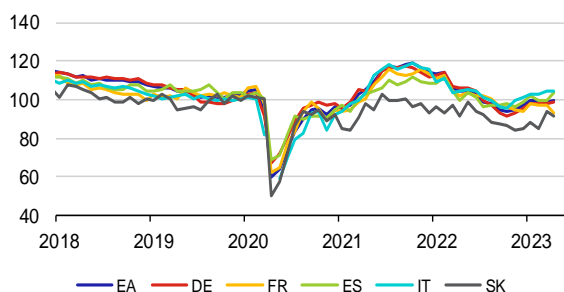
**GDP growth in selected euro area countries in 2023 and 2024, %**



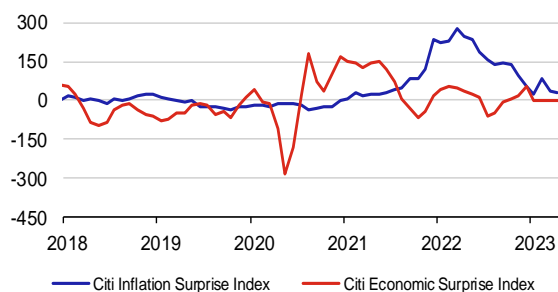
**Inflation in selected euro area countries in 2023 and 2024, %**



**ESI leading indicators**



**Economic and inflation surprises in the euro area, %**



	EA	DE	FR	ES	IT	SK
2/23	99.6	98.0	97.2	99.8	102.7	84.8
3/23	99.2	97.9	97.5	99.9	104.6	93.7
4/23	99.3	98.7	93.3	103.6	104.9	91.8

**Inflation expectations based on 5year inflation swap and SPF**

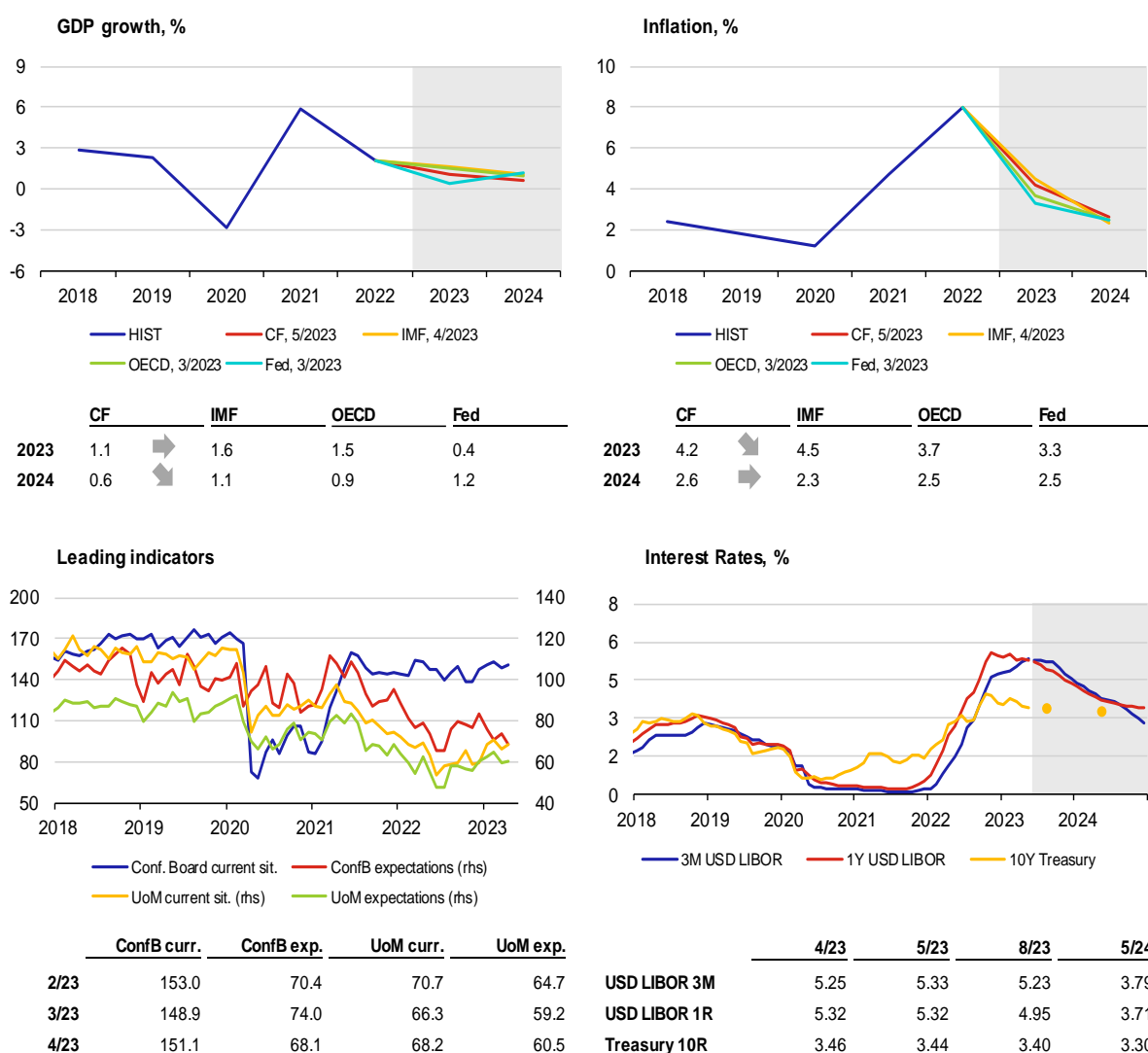
	5y5y	SPF
3/23	2.40	2.12
4/23	2.44	2.13
5/23	2.43	2.13

## II.3 United States

**The Fed raised rates by 0.25 pp at its meeting in May, but no further rate increase is expected for now.** The US central bank raised rates by the standard amount in line with market expectations to 5–5.25% and is expected to keep rates stable this year. A reduction is expected in 2024 Q1. The tightening of monetary policy affected another bank in late April and early May when the regulator was forced to close First Republic Bank.

**Annual consumer price inflation was 4.9% in April. Core inflation reached 5.5% as expected.** Both figures rose by 0.4% month on month, which is still not the rate the Fed would like to see. Developments in services are especially important, as price growth may continue to feed through from this sector, where there is an upward pressure on wages due to the tight labour market. Non-farm payrolls rose by 253,000 in April, and unemployment fell to 3.4%. However, the participation rate has still not reached the level in 2019. The CF outlook for this year declined slightly to 4.6% and will stay above the inflation target next year as well, at 2.6%. The April survey of Bloomberg analysts indicates only slightly lower figures.

**The US economy grew by 1.1% in Q1 (quarter on quarter, annualised). The analysts are still expecting a recession in the second half of this year.** The new CF outlook leaves GDP growth expectations for this year at 1.1%. However, growth outlooks for next year fell to 0.6%. Growth is still being driven by household and government consumption but a reduction in the growth rate is expected here. Retail recorded a month-on-month decline for the second consecutive month, and the situation for property sales and the construction of new houses and apartments is also negative. Consumer confidence is falling, and business confidence indicators are also decreasing. On the other hand, the PMI indicators were in the expansion band in April and increased further compared to March.





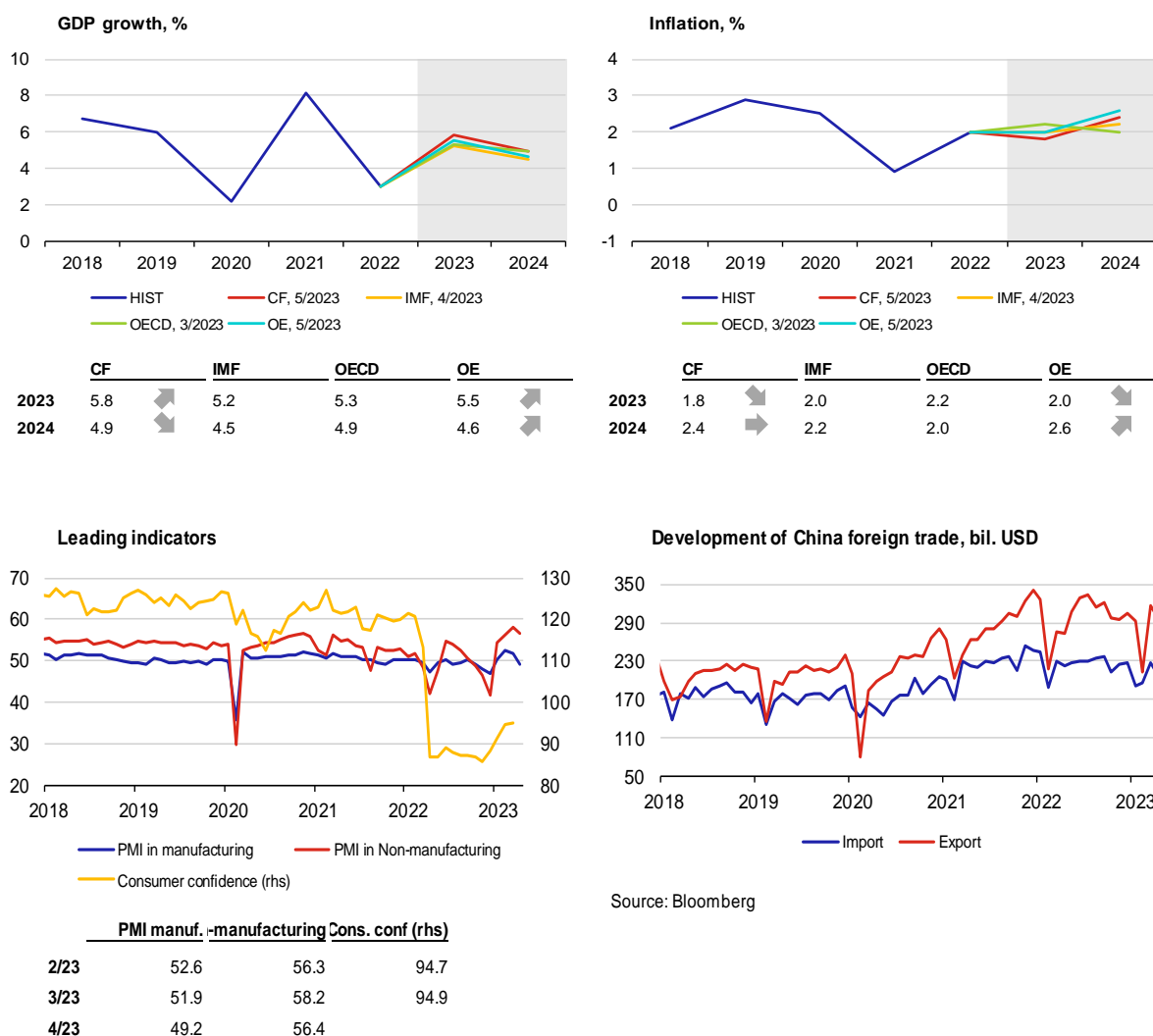
## II.4 China

**Chinese economic growth has been driven mainly by domestic consumption since the start of this year.** Part of the current growth in private consumption this year can still be attributed to catching up after three years of anti-pandemic restrictions. Even so, observers mostly expect strong growth not only in 2023, but also in 2024, and the Chinese government's growth target this year is 5%. At the same time, there are warning signs, especially in the form of very weak growth in private investment (0.6% for Q1). The high rate of unemployment among young people (16–24 years) is also a cause for concern at 19.6%, down only marginally from the all-time high of 19.9% in July 2022.

**Business and consumer sentiment indicators dampen expectations regarding a continuation of the economic recovery for the rest of this year.** The Caixin Manufacturing PMI fell unexpectedly to below the 50-point threshold in April (to 49.5 points), which is generally due to a combination of a continued slowdown in the domestic construction industry and weak demand abroad. In fact, the year-on-year price index of residential property fell in 2023 Q1, although the figures for March suggest the start of growth. The services PMI remained solid at 56.4 in April, which is much higher than throughout 2022.

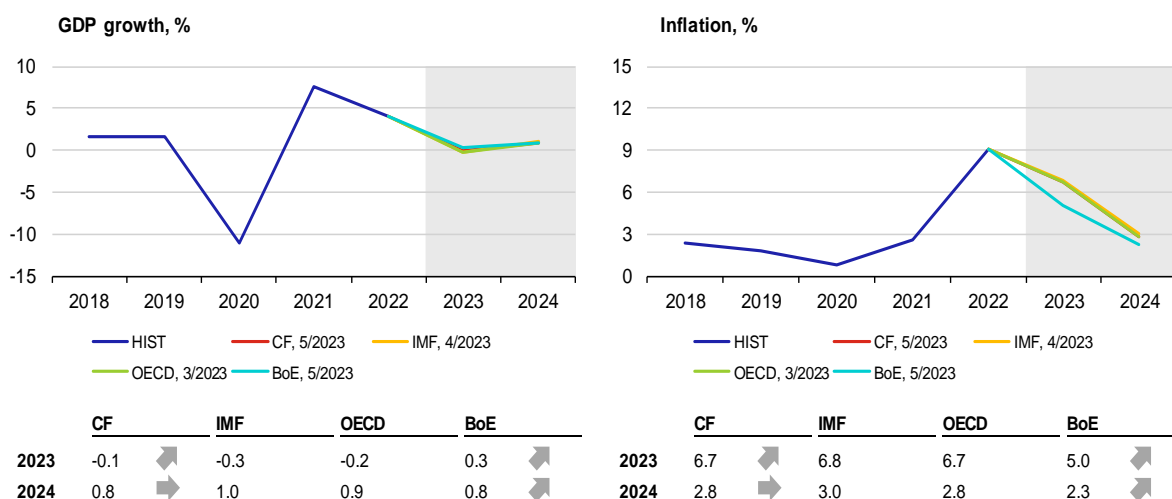
**Year-on-year consumer inflation lagged behind most analysts' expectations and reached only 0.1% in April.** In month-on-month terms, the CPI has been falling for the third consecutive month (most recently by 0.1%). Food prices, affected by falling transport costs, contributed most to this development. Core inflation remained at 0.7% year on year (the same as in March). The year-on-year change in the producer price index was negative for the seventh consecutive month (-3.6%).

**Exports from China have surged this spring.** After record year-on-year growth in March, growth in April (8.5%) was also stronger than prevailing expectations. This result is strongly affected by the massive surge in exports to Russia (three times higher than in April 2022). Conversely, exports to EU countries only grew by single digits (3.9%), while exports to the USA even fell (-6.5%).



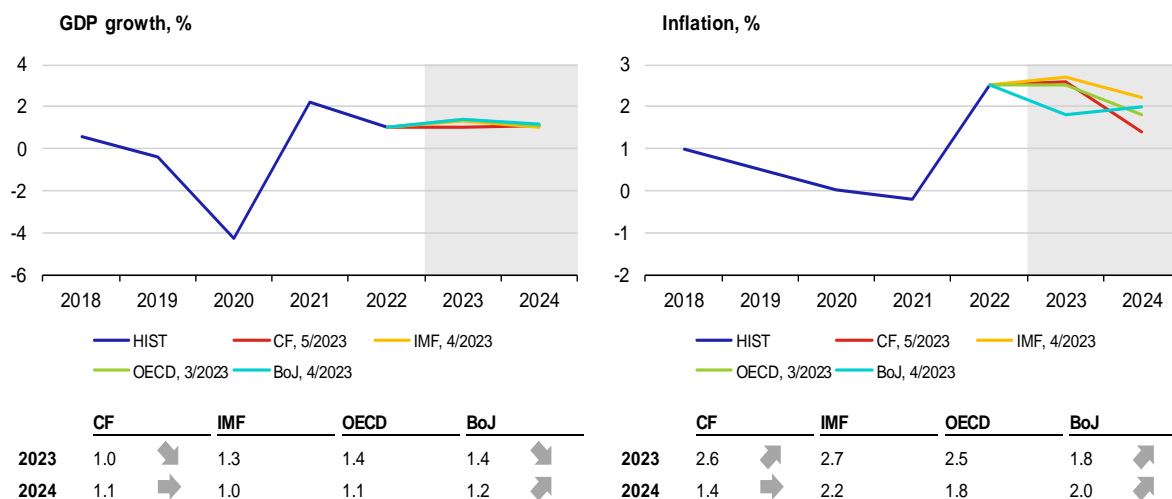
## II.5 United Kingdom

**Against the backdrop of still double-digit inflation, the BoE raised its key interest rate in May.** The rate has thus increased from 0.1% to 4.5% since December 2021. Year-on-year consumer inflation has been at around 10% since summer 2022, well above the 2% target. In March, inflation slowed, returning to the January level (10.1%). However, it continues to dampen demand. Falling motor fuel prices were offset by another sharp rise in food prices. Core inflation stagnated at 6.2%, with no signs of a significant decrease in inflation pressures. According to the BoE, inflation should slow rapidly this year (5%), and it is expected to reach the target in 2024. Despite high inflation and high interest rates, the UK economy is showing encouraging resilience. In its forecast, the BoE now estimates that the economy will grow both in 2023 (0.3%) and in 2024 (0.8%). The composite PMI rose to 54.9 in April, pointing to the fastest private sector expansion in the past year. Consumer confidence is also improving, and is currently at its highest level since the invasion of Ukraine.



## II.6 Japan

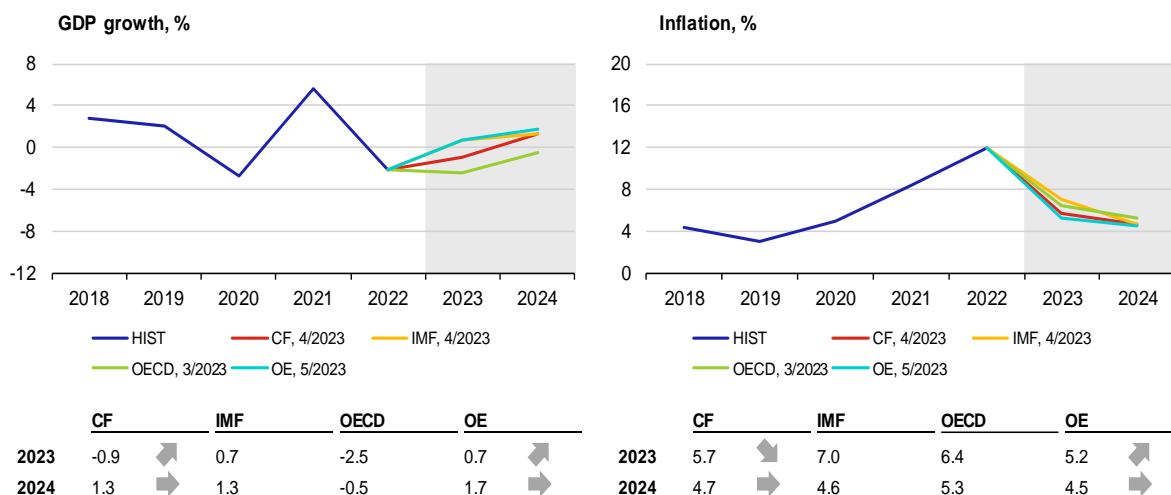
**Japan was one of the few advanced countries to withstand the energy crisis without harm to the external balance of the economy.** Japan, whose international trade had traditionally been balanced or in slight surplus, experienced a dramatic rise in the prices of imported commodities, especially energy and agricultural ones, from mid-2021. Similarly to many EU countries and the UK, this led to a wide goods balance deficit in the order of a few per cent of GDP. In Japan, the import bill was further increased by the depreciation of the yen to historical lows in 2022. However, this effect was virtually offset by returns on Japan's large-scale equity and debt investment abroad. Due to interest and dividends on foreign assets – which conversely increased in yen terms due to the weak currency – the seasonally adjusted current account of the balance of payments remained positive throughout the crisis. By contrast, in advanced capital importing countries (e.g. the UK, France, but also the Czech Republic), the outflow of investment income further widened the external imbalance, resulting in record-high current account deficits.





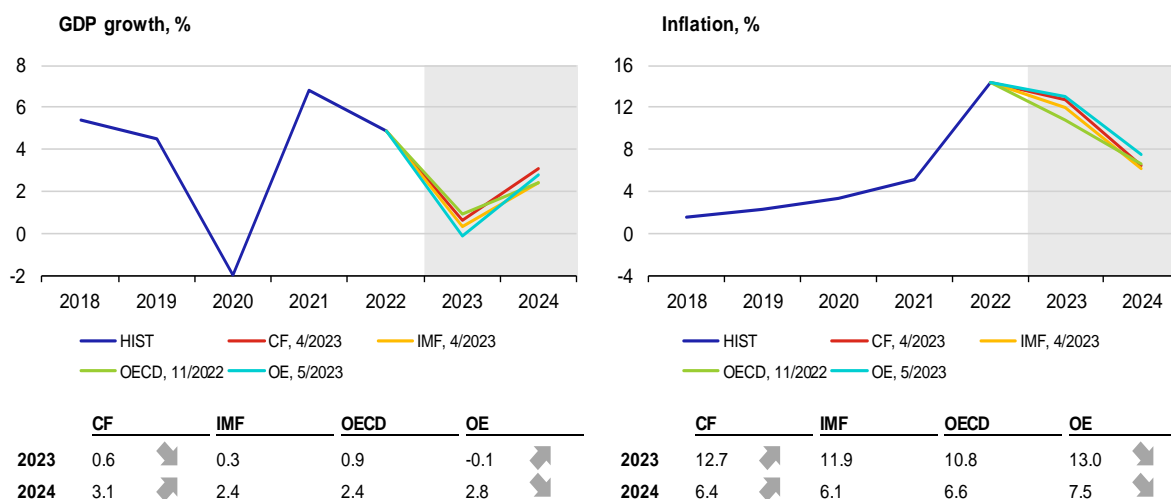
## II.7 Russia

**In Q1, nominal exports of Russian goods fell by more than a third year-on-year, while imports were flat.** The significant drop in exports is due to both price and volume reductions in the export of mineral fuels. After solid growth in 2022 Q1, total exports steadily declined, falling by 9% year on year in 2022 Q4. By contrast, the largest decline in nominal goods imports occurred in Q2, when a decrease of almost a quarter was recorded. Since then, import growth has improved. Inflation is continuing to fall due to base effects and remained at 3.5% in April. The key interest rate has stayed at 7.5% since last September. After taking into account the latest price growth, the Russian central bank lowered the inflation outlook for this year to 4.5–6.5%. By contrast, its GDP growth outlook was raised to 0.5–2.0%.



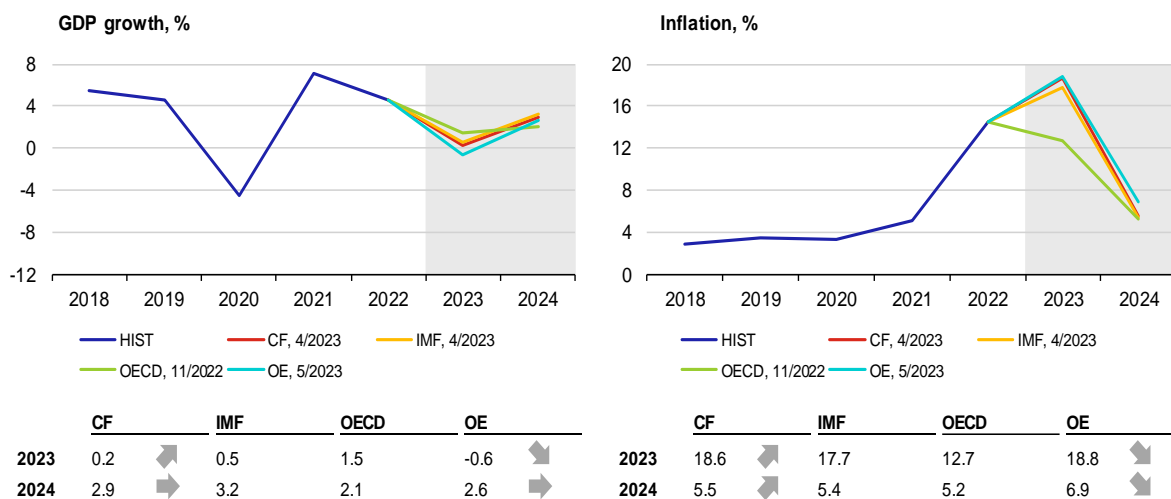
## II.8 Poland

**The drop in inflation was more pronounced in April than market expectations; CF, IMF and OE analysts all expect inflation of 12–13% in 2023.** Consumer price inflation fell from 16.1% in March to 14.7% in April, the lowest level since May 2022. High prices are already starting to be reflected in the downturn in domestic demand. Firms saw a drop in new orders, which led to a decline in production and jobs. The PMI in manufacturing declined further to 46 in April and thus remains in the contraction band. The annual drop in retail sales continued in March (-7.3%), with the biggest declines recorded for solid, liquid and gaseous fuels. In early January, the temporary tax reduction on fuel and energy introduced in February 2022 was cancelled, and this drop can therefore be partly attributed to a high base. The CF, IMF and OECD outlooks agree that GDP will grow by 0–1% this year. OE has revised its outlooks upwards but is still expecting a mild recession.



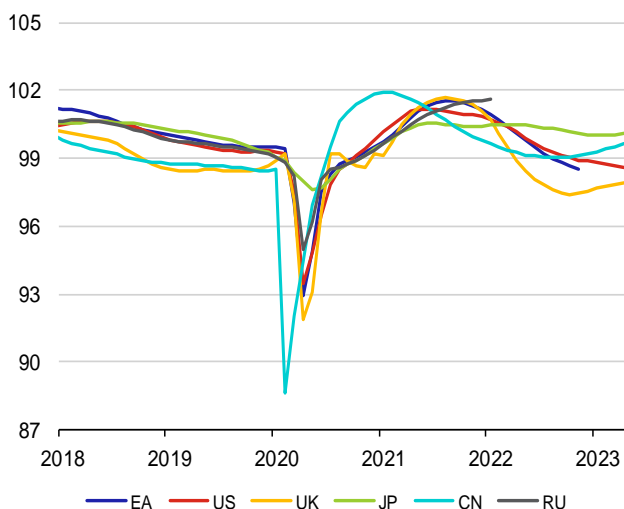
## II.9 Hungary

**The move by the Hungarian central bank paves the way for the first rate reduction in the CEE region.** Inflation in April surprised market expectations, reaching “only” 24% year on year. This was due mainly to a higher-than-expected drop in food and energy prices. Month-on-month inflation is slowing further, probably also due to a stronger forint. The MNB is coming under pressure from Prime Minister Orban’s government, which points to a cooling of domestic demand and government debt servicing costs. Therefore, despite high inflation, the MNB decided to reduce the upper limit of the interest rate band from 25% to 20.5% at its April meeting. This technical reduction in interest rates is supposed to be the first step in a “multi-stage process” of monetary policy normalisation. The next step will be a discussion about the 18% overnight deposit rate, which the MNB introduced in October 2022 to stop the forint depreciating against the euro and the dollar to a historical low.

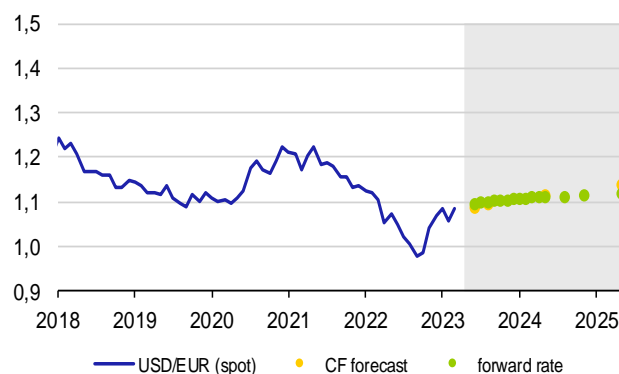


## III. Leading indicators and outlook of exchange rates

OECD Composite Leading Indicator

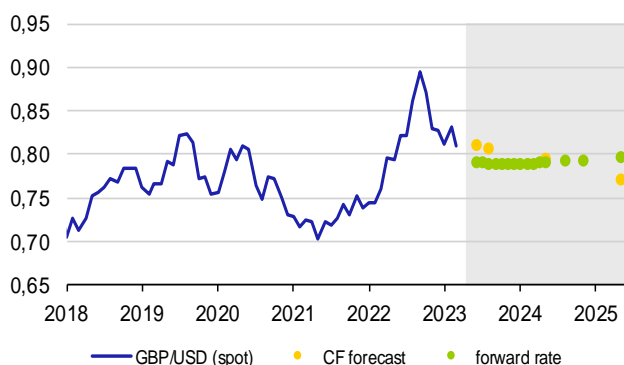


The US dollar (USD/EUR)



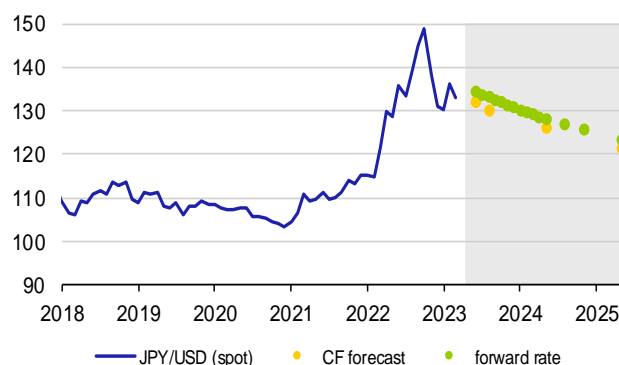
	9/5/23	6/23	8/23	5/24	5/25
spot rate	1.096				
CF forecast		1.091	1.097	1.115	1.139
forward rate		1.098	1.102	1.113	1.120

The British pound (GBP/USD)



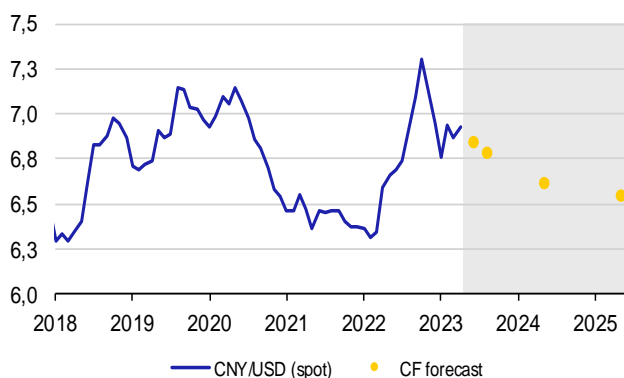
	9/5/23	6/23	8/23	5/24	5/25
spot rate	0.792				
CF forecast		0.812	0.808	0.796	0.772
forward rate		0.792	0.791	0.792	0.798

The Japanese yen (JPY/USD)



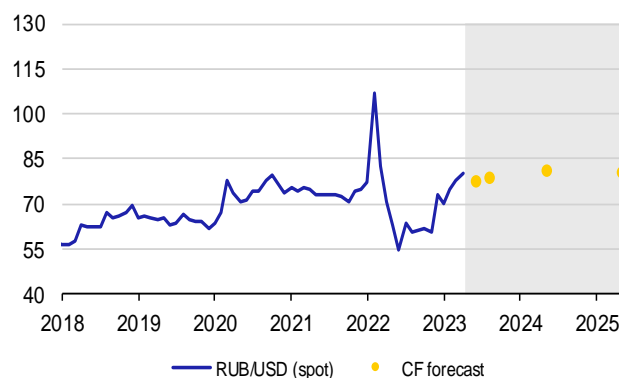
	9/5/23	6/23	8/23	5/24	5/25
spot rate	135.1				
CF forecast		132.1	130.4	126.3	121.6
forward rate		134.6	133.3	128.3	123.6

The Chinese renminbi (CNY/USD)



	9/5/23	6/23	8/23	5/24	5/25
spot rate	6.927				
CF forecast		6.844	6.792	6.620	6.553

The Russian rouble (RUB/USD)



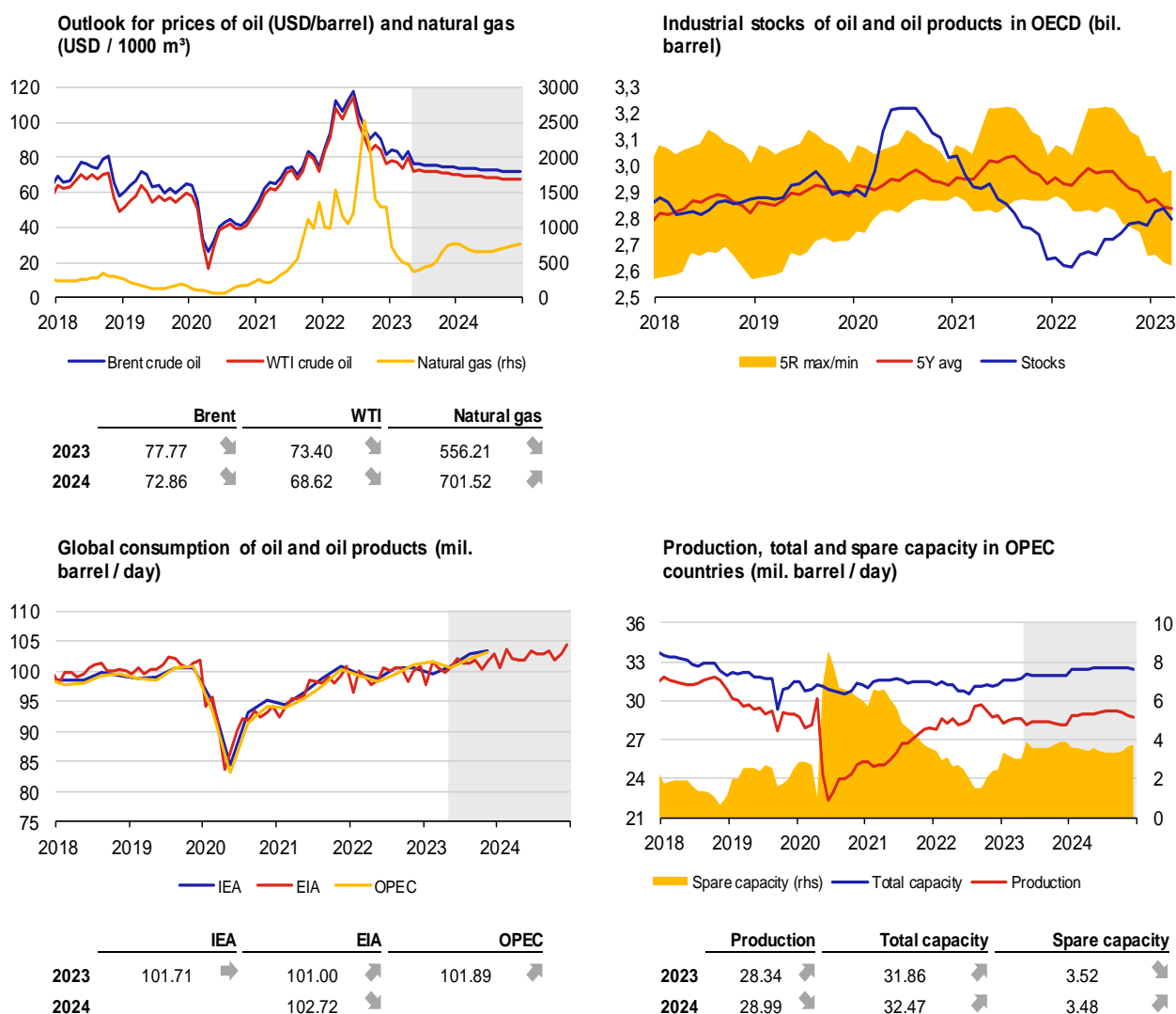
	9/5/23	6/23	8/23	5/24	5/25
spot rate	77.45				
CF forecast		77.80	78.88	81.67	80.85

Note: Exchange rates as of last day of month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibility of hedging future exchange rate.

## IV.1 Oil

The Brent oil price rose above USD 87/bbl in mid-April (and nearly equalled this year's high) but fell sharply for the rest of the month, recording its lowest price this year of USD 72.3/bbl in early May. The sharp growth in the price was due mainly to a surprise cut in OPEC+ extraction quotas from May, and also to a disruption of supplies through the pipeline from Iraq to Turkey, falling oil stocks in the USA and lower oil exports from Russia. Oil imports to China were the highest in almost three years in March, and signs of a slowdown of inflation in the USA also helped improve sentiment. However, the price of oil lost ground in the second half of April due to worse economic news from the USA, which again renewed concerns of a recession. The falling margins of Asian refineries signalled weaker demand in Asia, while Iran increased oil production. Long-term investors are waiting for clearer signals about the US and Chinese economies. The actual impacts of the cut in OPEC+ quotas and information on the export of oil and oil products from Russia will also be important for them. The market is thus dominated by short-term traders, who make it highly volatile. However, the physical oil market is relatively tight and indicates excessive speculative sell-offs. According to some analysts, it is only a matter of time before the OPEC+ output cuts, weak extraction growth in other countries and a recovery in demand in China are reflected in the market.

The market futures curve was falling in mid-May, signalling a Brent price of USD 74.3/bbl at the end of this year and USD 71.8/bbl at the end of 2024. The EIA forecast expects demand and supply on the market to be roughly balanced until 2024 Q1, which should keep the oil price at USD 75–80/bbl. However, the oil glut in the market is then expected to cause the price to fall to USD 72/bbl at the end of 2024. By contrast, some analytical institutions expect the price to grow gradually towards USD 100/bbl over the next two years as demand in China recovers.



Source: Bloomberg, IEA, EIA, OPEC, CNB calculation

Note: Oil price at ICE, average natural gas price in Europe – World Bank data. Future oil and gas prices (grey area) are derived from futures. Industrial oil stocks in OECD countries – IEA estimate. Production and extraction capacity of OPEC – EIA estimate.

## IV.2 Other commodities

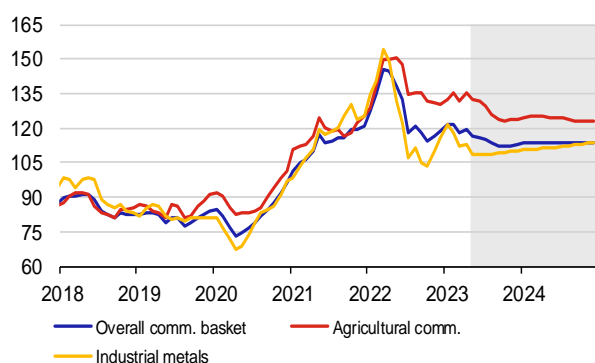
**Gas prices in Europe (TTF) returned to a slight downward trend in April and fell below EUR 35/MWh in mid-May.**

The storage filling rate rose from 55.7% at end-March to 59.7% at end-April. The situation on the market remains calm despite rising demand from industry. However, it could be complicated by hot and dry weather in the summer that would lower river levels, below-average winter temperatures or growth in LNG demand in Asia. Coal prices in Europe were almost flat from February to April. They fell slightly in early May due to weaker demand outside China and strong output in India.

**The industrial metal price index was broadly flat in April and fell further in the first half of May.** The drop in the prices of most metals was due mainly to the Chinese PMI in manufacturing, which returned to the contraction band in April, indicating that industrial activity in China will probably decline this month. In addition, the effect of the weakening dollar faded out in the first half of May. It supported demand for commodities in March and April, preventing a bigger drop in their prices. Only lead and tin recorded moderate price increases due to solid consumption in the production of electric cars. Weak demand from Chinese industry and construction also pushed down steel and iron ore prices from mid-March.

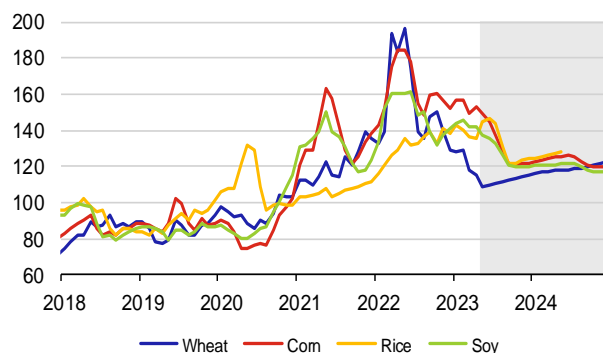
**The food commodity price index remains relatively high despite a slight drop in the first half of May.** Wheat prices fell to a two-year low in the second half of April due to the expected large harvest in most regions, especially the USA and Russia. However, they increased slightly in early May owing to uncertainty about exports from Ukraine and their outlook is rising. Prices of other grains were little changed and their outlook is falling. Sugar prices recorded strong growth in April due to drought in India and restrictions on Indian exports. However, their outlook is also falling sharply.

Non-energy commodities price indices



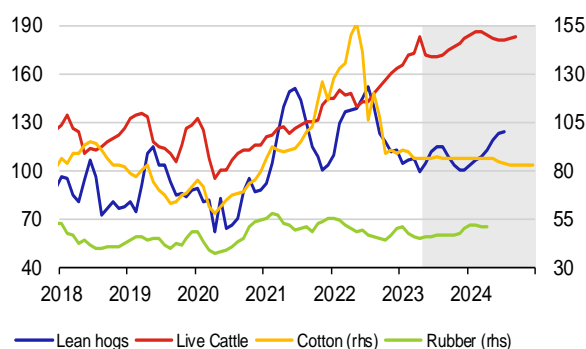
	Overall	Agricultural	Industrial
2023	116.0	129.2	111.5
2024	113.7	124.1	112.0

Food commodities



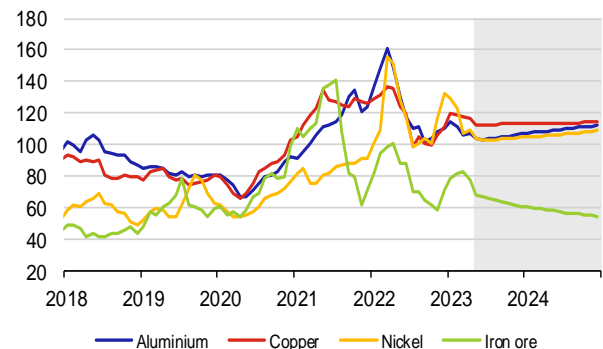
	Wheat	Corn	Rice	Soy
2023	115.6	138.5	134.3	132.2
2024	119.1	123.1	126.3	119.7

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2023	106.1	173.9	87.0	46.8
2024	113.7	182.9	84.4	51.2

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2023	106.6	114.7	108.3	70.0
2024	110.0	113.8	106.9	57.7

Source: Bloomberg, CNB calculations.

Note: Structure of non-energy commodity price indices corresponds to composition of The Economist commodity indices. Prices of individual commodities are expressed as indices 2010 = 100.

## The European natural gas market during the energy crisis<sup>1</sup>

*The European natural gas market underwent major changes in 2021–2022, both in terms of prices and the supplier structure. After Russia's invasion of Ukraine, the European Union tried to rid itself quickly of its strong dependence on natural gas supplies from Russia. As a result, imports of natural gas in liquefied form (LNG) increased rapidly and strengthened further. This put pressure on the inadequate gas infrastructure in Europe and raised concerns about whether it would be possible to secure sufficient gas supplies for the operation of industrial firms. The European administration thus put pressure both on industry and households to reduce gas consumption. Thanks to huge savings and milder weather, EU countries managed to get through winter 2022/23 without any major problems, but in the absence of supplies from Russia, the European market will also remain tight in the years ahead.*

### Introduction

**The European natural gas market started to change gradually from about 2010.** The last ten years saw structural changes in the global natural gas market amid an ever-increasing excess of supply over demand (due, among other things, to the shale revolution in the USA). Europe had sufficient supplies of pipeline gas from Russia, Norway and Algeria, and more and more LNG, which had not been sold in other parts of the world, was also ending up in Europe. The gas spot prices were thus mainly on a downward trend and were mostly below the prices of standard long-term contracts indexed to the oil price at the time. Therefore, buyers gradually put increasing pressure on traditional suppliers to allow spot market prices of gas (which mainly reflect the current fundamentals in the gas market) to be taken into account in the prices of long-term contracts in addition to the oil price. In the end, most contracts in Europe were decoupled from the price of oil, and the price was derived exclusively from gas market prices, even for long-term contracts. This is described in more detail in [GEO 2022/03](#).

**However, the beginning of this decade saw a major turnaround.** Global demand for natural gas grew strongly due to its low price and the growing possibility of supplying LNG even to regions far from the extraction sites. Natural gas also became a welcome alternative for reducing CO<sub>2</sub> emissions. Moreover, gas-fired power stations increased in importance as a flexible reserve source for wind and solar power plants, whose production capacity is growing rapidly but which are unstable in terms of output. One-off factors, which were described in more detail in the aforementioned issue of the GEO, also contributed to the strong demand surplus in 2021. The price of natural gas in Europe and Asia thus began to grow strongly in 2021, which also led to strong growth in electricity prices.

**At the end of February 2022, the situation on the gas market was further exacerbated by Russia's military invasion of Ukraine.** Supplies of Russian pipeline gas to the EU had already weakened gradually during 2021 due to Russia's unwillingness to sell gas on the spot market and EU Member States' unwillingness to conclude new long-term gas import contracts. In 2022, the reduction in Russian pipeline gas supplies to Europe was mainly a reaction to EU sanctions against Russia. European countries thus had to quickly get rid of their strong dependence on Russian gas and began to look for alternative sources. This brought about a rapid change in the structure of natural gas suppliers to Europe (while there were no significant changes in supplier-customer relations in the rest of the world<sup>2</sup>).

**As a result of these factors, LNG imports to Europe have also risen sharply.** However, LNG imports were putting initially under considerable pressure the inadequate European gas infrastructure. At the same time, Europe moved from the role of recipient of residual LNG to the opposite, where its increased demand for LNG imports became a driving force behind the growth of global prices of this raw material. There were widespread concerns of an energy crisis in Europe, to which the European administration responded with increased pressure to reduce natural gas consumption across the economy. In the following sections, we will describe in more detail the development of natural gas prices both in the longer term and in the past two years. We will also look at the changes that have occurred in the EU in connection with the reduction of natural gas imports from Russia. Next, we outline the extent of savings that have occurred in Europe both as a result of concerns about gas shortages and due to high gas prices. Finally, we will try to make a rough estimate of the increased costs currently facing European customers due to the previous transition to market prices of natural gas.

<sup>1</sup> Author: Jan Hošek. The views expressed in this article are those of the author and do not necessarily reflect the official position of the Czech National Bank.

<sup>2</sup> The exception was China, which started to conclude long-term contracts for the import of LNG on a larger scale, while making favourable purchases on the spot market earlier. The gas purchased on the basis of long-term contracts is then consumed by China itself if the market price is low. If prices are high, it is returned to the global market (and coal, for example, is used for domestic consumption instead). China is thus increasingly performing a balancing act between global demand and supply in several commodity markets, including LNG.



## Import prices of natural gas to Europe

For the purposes of this article, we will derive prices from Eurostat's customs statistics. Natural gas is traded in many trading venues and this results in the different prices we can observe for a given period. For example, prices at Europe's largest trading hub (Title Transfer Facility, TTF) tend to be lower than prices on the Central European exchange (Power Exchange Central Europe, PXE). They may also be spot prices or futures prices with delivery typically in the next month, quarter or year. However, there are also a number of differently defined publicly traded contracts and many contracts whose data are not public. Therefore, we try to use the price derived from Eurostat's customs statistics in this study. It is calculated on the basis of the declared imported quantity (in hundreds of kg) and the declared value (in euro) and converted to the commonly used unit EUR/MWh. Due to the different physical properties of natural gas imported from different regions (see Table 1), the conversion from weight units to energy content is only indicative. Here, a coefficient of 13.6 kWh/kg was used in the conversion.

Chart 1 shows the average import prices of pipeline gas and LNG to the EU from the rest of the world. For comparison, we also included the total average import price of natural gas to Europe, as published by the World Bank (this statistic was previously published by the IMF).

The average import prices differed from market (exchange) gas prices until around 2010. The majority of imports were based on long-term contracts, indexed to the price of oil. However, in the last decade, with the decline in market gas prices, an ever-increasing share of gas was imported into the EU based on those market prices, leading to a convergence of World Bank data with exchange prices. In the last few years this data series has been practically mirroring the futures contract price for the coming month at the TTF trading hub.

The price of imported LNG was slightly higher than that of pipeline gas and fluctuated more for most of the period under review (see Chart 1). This may be because contract prices for the import of pipeline gas tend to be smoothed by several-month moving averages. Chart 1 also shows the dramatic rise in gas prices that has occurred since early 2021 as a result of the events described above. According to the futures contracts, we can only expect a more marked drop in natural gas prices in 2025, when significant new LNG production capacity should be put into operation (especially in Qatar and the USA).

The prices of imported gas can differ quite significantly across individual EU countries. There was considerable convergence within the EU between 2017 and 2019 alone. Conversely, we see a massive increase in the differences in prices around the European average from 2021 onwards. In this period, the Czech Republic and Spain showed mainly lower import prices. By contrast, import prices in Slovakia, Slovenia and Greece were significantly above the European average (unfortunately, Eurostat does not publish individual data, for example, for Germany). Given the EU's plan to unify natural gas purchases as much as possible, import prices in individual countries might be expected to converge again in the future.

## Imports of pipeline gas from countries outside the EU

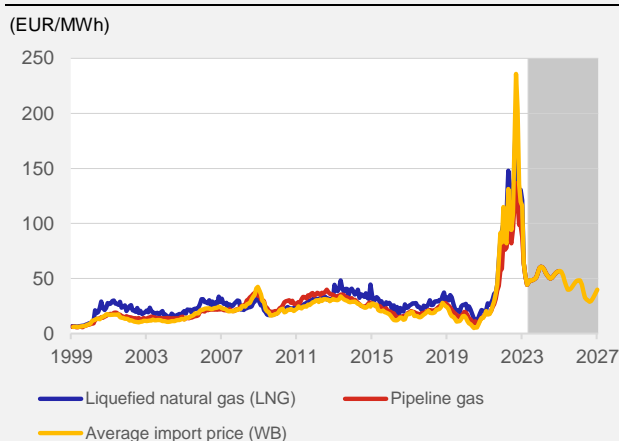
Table 1 – Physical characteristics of natural gas

natural gas	density	composition (%)				heating capacity	
	kg/m <sup>3</sup>	methane	ethane	propane	nitrogen	kWh/m <sup>3</sup>	kWh/kg
tansit	0.680	98.39	0.44	0.16	0.84	9.445	13.890
Norwegian	0.788	85.80	8.49	2.30	0.96	10.441	13.250
Algerian	0.777	86.90	9.00	2.60	0.30	10.754	13.840
Dutch	0.776	81.31	2.85	0.37	14.35	8.339	10.746

Source: <https://www.tzb-info.cz/>

Note: density at 20 °C and normal pressure, calorific value at 15 °C and normal pressure

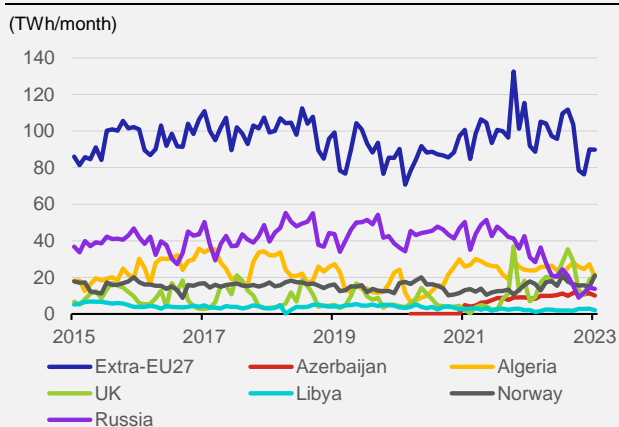
Chart 1 – Average prices of imported natural gas into the EU27



Source: Eurostat, World Bank and author's calculations

Note: Average import price according to the World Bank brought forward by one month. The grey area is the forecast based on futures contracts.

Chart 2 – Amount of imported pipeline gas to the EU by country of origin



Source: Eurostat, author's calculations

**Imports of pipeline gas to the EU decreased substantially from around October 2022 onwards.** There was already a drop in the amount of pipeline gas imported from Russia<sup>3</sup> to the EU in 2021 Q4 (see Chart 2) but this decrease was initially offset by increased imports from the UK, Norway and Azerbaijan, while supplies from Algeria were flat, remaining close to their all-time high. However, there was a significant drop in pipeline gas supplies to the EU after the Nord Stream gas pipeline was completely shut down. Italy, Belgium, Spain, Hungary, Greece, Ireland, Bulgaria and Slovakia were among the largest importers of pipeline gas from outside the EU in 2022. We can assume that Germany and Poland would also be on this list, but individual data for these countries is not included in Eurostat's customs statistics. In the case of other EU countries importing pipeline gas, this involved trade within the EU.

### Imports of liquefied natural gas

**The amount of LNG imported to the EU has reached record highs since the start of 2022.** Imports of LNG from the USA, which have been growing strongly since 2019, accounted for a major share of the total (see Chart 3). However, imports from Russia have also recorded strong growth since 2018. Other important exporters of LNG to the EU include Qatar and Nigeria, while smaller volumes are currently imported from Algeria, Egypt, Trinidad and Tobago, and Norway. Imports from Angola have also grown strongly in recent months.

**The southern and south western European countries are traditionally the largest importers of LNG in Europe.** Spain, France and Italy imported liquefied natural gas as far back as the 1990s, as did Belgium. Later, Portugal, Greece, the Netherlands, Croatia, Lithuania, Finland and Ireland gradually followed suit. Apart from the EU countries, the UK is also currently importing large volumes of LNG, which it can then send via pipeline to north western Europe. Some countries, such as Germany, France and Poland, do not publish data in these statistics.

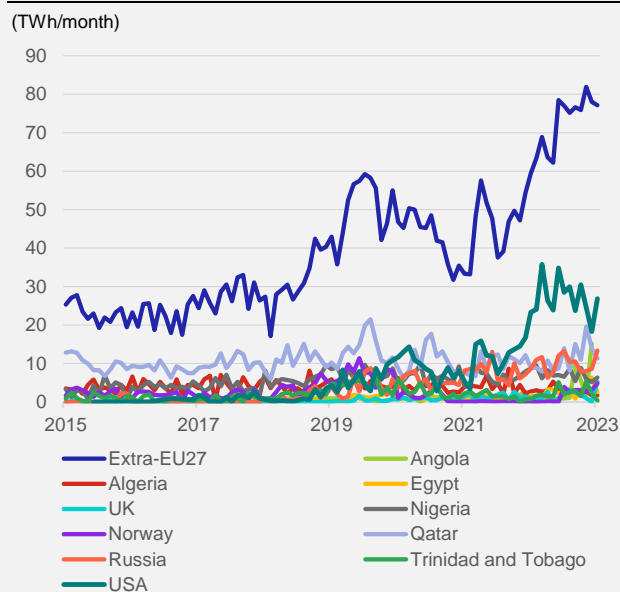
**The strong and growing imports of LNG from Russia is a problem for the EU.** Unlike pipeline gas, Russian LNG is not subject to EU sanctions yet. In 2022, the largest importer of Russian LNG was Spain, which has a long-term contract with Russia to import LNG until 2038. Other large importers of LNG from Russia are Belgium and France. LNG exports from Russia to Europe increased by 30% in 2022. Imports to Spain have increased by as much as 84% since the start of the war in Ukraine, when the country reduced its traditional imports from Algeria due to diplomatic disputes. The European administration is putting pressure on Member States to limit LNG imports from Russia as much as possible and not to conclude new contracts. However, this represents another risk in securing sufficient natural gas supplies to Europe in the future.

### Savings in 2022

**During winter 2022/23, concerns about a critical shortage of natural gas in Europe did not materialise, due mainly to a pronounced drop in consumption.** This was recorded for both households and industry. According to the IEA (IEA, 2023c), overall consumption of natural gas in the EU last year fell by a total of 13%, i.e. 55 billion m<sup>3</sup> (bcm), compared to 2021. Household and business consumption from the distribution network fell by 28 bcm (17%). Of this, a saving of about 18 bcm can be attributed to a milder winter (with 12% fewer 'heating degree days'). In addition, an increase in heating efficiency and the transition to alternative fuels brought an estimated saving of 10 bcm. Demand from industry was reduced by about 25 bcm (25%) by limiting production and/or the transition to alternative fuels, especially in gas- and energy-intensive sectors.

**Nonetheless, gas consumption in the energy sector remained relatively stable last year.** There was no reduction of natural gas consumption in electricity generation despite high growth in gas prices, the drop in total electricity consumption and increased output of coal, solar and wind power plants. This was due to reduced hydro power generation and massive outages at French nuclear power stations, when a large proportion of their reactors had to be shut down due to technical problems. The situation with the French nuclear power plants has partially improved this year, but their outages still pose a risk of increased natural gas consumption in Europe.

**Chart 3 – Amount of imported LNG to the EU27 by country of origin**



Source: Eurostat, author's calculations

<sup>3</sup> The import volumes are drawn from Eurostat's customs statistics and may in some cases be lower than the actual values, as the customs statistics do not include data for some countries. Nonetheless, the data are sufficient to illustrate the trend.

### Box 1 – Important points of the baseline scenario of the IEA's 2023 gas market forecast (IEA, 2023a)

**Global consumption of natural gas will be broadly flat this year.** China is expected to record growth of 6.5% (24 bcm). Consumption is expected to grow by 3% in India. Conversely, gas consumption is expected to drop in Japan and South Korea (by 4% and 2% respectively). A fall in consumption is also expected in the USA. Gas consumption is expected to fall in the EU this year by 3% (10 bcm) from 350 bcm in 2022. This should be achieved exclusively through lower consumption in electricity generation (down by 20% year on year). By contrast, gas consumption in industry is expected to grow by 13% due to lower prices. Consumption is expected to rise by 3% in the residential and commercial sectors, assuming the weather is in line with the long-term average.

**Global supply of natural gas remains tight.** Growth in LNG production will not be enough to offset the expected decrease in supplies of Russian pipeline gas into the EU.

**Global production of LNG is expected to grow by 4.5%** (23 bcm). Half of this will come from capacity growth in the

USA. Production in Africa is expected to grow by 10 bcm, especially in Algeria and Egypt.

**LNG imports to the EU are expected to increase by 11 to 140 bcm (up 9%).** By contrast, the import of pipeline gas from Russia will probably drop by 35 to only 25 bcm, assuming that supplies from the Turkstream pipeline and the pipelines via Ukraine remain at the December 2022 level. Pipeline gas supplies from Norway, Azerbaijan (TAP pipeline) and Algeria were already close to maximum capacity last year and are therefore not expected to grow further. Supplies from the UK were at a record high last year and are expected to drop slightly as the spread between TTF prices in the Netherlands and NBP prices in the UK narrow.

**Gas output in the EU is expected to fall by around 5%.** The Netherlands will see the largest decrease. Output will be broadly flat in Romania and Denmark.

**Supplies of pipeline gas from Russia to China are expected to increase by more than 40%.** The Power of Siberia pipeline is expected to supply 22 bcm this year as against 15 bcm in 2022.

### Outlook

**The International Energy Agency (IEA) has warned that the situation on the global gas market will also remain tight in 2023.** The agency reduced its estimate for the potential shortage of natural gas in the EU for 2023 compared to its December estimate (IEA, 2022c) in a crisis scenario from 57 to 40 bcm (due to the milder weather last winter and high LNG supplies). Therefore, European gas stocks are at historically high levels ahead of this year's replenishment season and according to BloombergNEF, storage capacity will be filled to the required 90% by the end of October 2023. However, according to the current forecast (IEA, 2023a), the market will face a large number of uncertainties and exogenous risks. There is still a need to save gas in Europe. The key points of the IEA's baseline scenario for the 2023 global gas market are summarised in Box 1.

**It will not be possible to rely on Russian gas supplies this year.** Limited amounts<sup>4</sup> of Russian gas are still flowing through pipelines via Ukraine and Turkey, but these supplies can be unilaterally interrupted at any time. A large amount of LNG, which is not yet subject to sanctions, is also imported into Europe from Russia<sup>5</sup>. However, the European administration is putting pressure on private companies to limit these imports too. If there was a ban on imports of Russian LNG, figuring out how to replace this amount from other sources would pose yet another challenge to the EU.

**Future demand from China is still a major unknown.** IEA estimates for extreme scenarios of 2023 LNG consumption in China differ by 40 bcm, i.e. 8% of total consumption in Europe. Wood Mackenzie analysts, for example, do not however expect China's demand for LNG this year to exceed the peak observed in 2021 due to rising domestic natural gas output and continued growth in pipeline gas supplies from Russia. However, lower gas prices will probably awaken the interest of smaller Asian countries in the import of LNG, which will increase competition among customers on the global market.

**There are indications that gas consumption in industry is increasing again this year in Europe.** This is particularly the case for Spain, the Netherlands and France and has occurred mainly in refineries and petrochemicals where different energy sources can be more easily substituted for one another. This could drive gas prices up again. On the other hand, however, many firms already moved part of their energy-intensive production capacity from Europe to other regions with lower energy prices last year, and it is unlikely that they will return.

**The current relatively low gas prices and the high price of emission allowances also lead to increased interest in the use of gas for electricity generation.** In Germany, gas-fired power plants with an efficiency of 55% and steam-gas units with an efficiency of 59% are already able to effectively replace older black coal units with an efficiency of 38% or newer black coal power plants with 40% efficiency at current prices (Vobofil, 2023).

<sup>4</sup> According to the European Commission, the share of Russian gas in total EU consumption decreased from 40% in 2021 to less than 10% at the end of 2022.

<sup>5</sup> While pipeline gas supplies to Europe have decreased dramatically, imports of Russian LNG have increased, accounting for 14% of total LNG imports to the EU last year.

**Last but not least, there is the risk of climate change, which increases the likelihood of protracted periods of drought.** The lack of precipitation thus reduces the production of electricity from hydroelectric power plants, while also leading to a drop in water flow levels. This, on the one hand, limits the transport of coal to coal-fired power plants and on the other hand reduces the amount of available cooling water, which limits the maximum production of thermal power stations. That said, according to meteorologists, for example, this year's seasonal snow cover in the Alps was the lowest since 2017.

## Results of the liberalisation of the European gas market from the perspective of recent developments

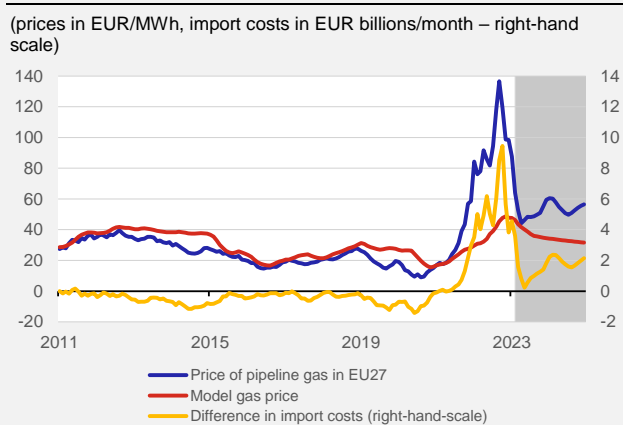
**It was beneficial for customers to transition to market (exchange) prices at a time when there was an excess of gas on the market.** Hošek (2022) discusses, among other things, the benefits and costs for European customers of moving from (long-term) contracts indexed to oil prices to shorter-term contracts whose prices are based solely on market prices of natural gas. He cites an IEA study (Zeniewsky, 2021), which admitted that the liberalisation of the gas market exposed European consumers to greater price volatility, but on the other hand saved them up to EUR 70 billion in gas imports in the past decade. However, the data ends in 2021, in which there was already a strong increase in natural gas market prices. It deprived European consumers of a significant part of their previous savings in a single year. In 2022, tensions on the global natural gas market heightened further, leading to additional strong growth in gas prices. We will therefore now try to estimate how the price of contracts derived from oil prices would develop and whether trading based on market gas prices is still beneficial for the European customer.

**It is practically impossible to accurately quantify the hypothetical price of natural gas contracts linked to the price of oil.** The main problem is that the details of the previous contracts, indexed to oil prices, are not publicly available. For our purposes, we simulated this price for the period under review using a model of the relationship between average gas prices in the EU and the Brent price. To specify the model and estimate its parameters, we only used the period from 2000 to 2010, when the large majority of contracts for the import of gas to Europe were still based only on the price of oil. The estimated model was then used to simulate hypothetical contract prices linked solely to the oil price in the following period, when price mechanisms were gradually adjusted so that they partially and later fully take into account the market prices of natural gas. We then compared the hypothetical prices calculated with the actual market import prices arising from Eurostat's customs statistics. The calculation also includes several years of forecasts.

### The liberalisation of the European gas market in the last decade led to lower prices for consumers but ...

While our calculations (see Chart 4) are only indicative<sup>6</sup> and qualitative in nature, we can conclude that savings for European consumers through the liberalisation of the European gas market over the last decade may very quickly disappear (if this has not happened already). Efforts by the European administration for a rapid transition to renewable energy sources lead in the medium term to an increased need for natural gas to fuel reserve gas power plants. Their counterbalancing role cannot yet be effectively replaced on a larger scale by, for example, battery storage or the production of green hydrogen. The unwillingness to conclude longer-term contracts for the import of gas, also stemming from the strategy of transition to renewable energy, will probably lead to higher costs of importing natural gas into the EU as a result of higher market prices of gas, at least during the transition period. The question then is whether the liberalisation of the gas market was not premature and whether the falling price of electricity from renewable sources will be able to offset the higher costs of ensuring the necessary supplies of natural gas to the EU in the transition period.

**Chart 4 – Comparison of gas import costs in Europe**



Source: Eurostat, CNB calculations

Note: The hypothetical difference between gas import costs based on current import prices and costs in the case of 100% oil-indexed prices.

<sup>6</sup> Chart 4 shows only the import of pipeline gas into the EU27. The results for imported LNG are similar. The total annual figures are lower in absolute value than those given in, for example, Zeniewski (2021). This may be explained by the fact that Eurostat's customs statistics, from which the data is drawn, indicate smaller import volumes for the EU27, as figures for some big countries are missing. However, their qualitative message is similar.



## Conclusion

**The natural gas market has become highly globalised in the last decade.** This was due to the rapid growth in supply (shale gas output in the USA) combined with the increased availability of LNG virtually anywhere in the world. Regions, which were previously isolated, are now connected, thus fostering natural gas price convergence. At the same time, however, supply or demand shocks in one area have an effect on other regions as well.

**Natural gas prices in Europe hit record highs in the context of the outbreak of the conflict in Ukraine.** In 2022, Europe therefore became a premium market, attracting massive LNG supplies which were supposed to offset the sharp decrease in pipeline gas exports from Russia to the EU. Strong demand from Europe also pushed LNG spot prices for the Asian market to historical highs. This led to a reduction in price-sensitive demand, especially in emerging Asian economies, and enabled the EU to obtain sufficient LNG supplies in 2022, refill its gas storage facilities and get through winter without any major problems. At the same time, however, there was a substantial and evidently long-term increase in natural gas import costs to the EU.

**The global market will remain tight at least until 2025, owing to the decrease in Russian pipeline gas exports.** European gas storage facilities remained fuller than usual after this winter and there have been significant savings in consumption, but the risk of limited supplies and extremely high gas prices has not been fully averted yet. More substantial growth in LNG production capacity (especially in the USA and Qatar) is not expected until 2025. The gas market will thus be volatile and sensitive to potential production outages in the coming years. The situation on the gas market is currently calm, but we cannot expect another significant drop in gas prices for the next few years.

**Therefore, some of the forecasts regarding the consequences of the liberalisation of the European gas market have materialised.** More than ten years ago, Melling (2010) predicted that large monopoly suppliers would regain their market power and the ability to influence the price of natural gas due to renewed growth in global demand. Some large suppliers remain unwilling to supply gas on the basis of short-term contracts and spot prices, as this means increased risk for them. China has recently understood that due to its growing dependence on LNG imports, it is beneficial for it to enter into long-term contracts which guarantee stability of supply and relative price stability. At the same time, it can use price volatility on the spot market to its advantage by redirecting part of its contracted gas back to the international market and meeting domestic demand from other sources (e.g. coal) in the event of a strong price increase. By contrast, it can increase domestic gas consumption if the spot market prices of gas are low. Conversely, the EU is avoiding concluding long-term contracts, which exposes it to the risk of supply shortages and strong price volatility on the spot markets. It will also most likely pay higher prices on average for gas imports than large buyers in other regions of the world (at least in the medium term).

## References

- Hošek, J. (2023): Developments in the European natural gas market, Global Economic Outlook 03/2022, Czech National Bank
- IEA (2022a): Gas Market Report, 2022 Q3, July 2022, <https://www.iea.org/reports/gas-market-report-q3-2022>
- IEA (2022b): Gas Market Report, 2022 Q4, October 2022, <https://www.iea.org/reports/gas-market-report-q4-2022>
- IEA (2022c): How to avoid gas shortages in the European Union in 2023, December 2022, <https://www.iea.org/reports/how-to-avoid-gas-shortages-in-the-european-union-in-2023>
- IEA (2023a): Background note on the natural gas supply-demand balance of the European Union in 2023, February 2023, <https://www.iea.org/reports/background-note-on-the-natural-gas-supply-demand-balance-of-the-european-union-in-2023>
- IEA (2023b): Gas Market Report, 2023 Q1, February 2023, <https://www.iea.org/reports/gas-market-report-q1-2023>
- IEA (2023c): Europe's energy crisis: What factors drove the record fall in natural gas demand in 2022?, March 2023, <https://www.iea.org/commentaries/europe-s-energy-crisis-what-factors-drove-the-record-fall-in-natural-gas-demand-in-2022>
- Melling, Anthony J. (2010): Natural gas pricing and its future, Carnegie Endowment for International Peace [https://carnegieendowment.org/files/gas\\_pricing\\_europe.pdf](https://carnegieendowment.org/files/gas_pricing_europe.pdf)
- Vobořil, David (2023): Klesající ceny plynu v Evropě způsobují nahrazování uhlí plynem při výrobě elektřiny, OEnergetice.cz, březen 2023, <https://oenergetice.cz/nemecko/klesajici-ceny-plynu-v-evrope-zpusobuji-nahrazovani-uhli-ve-vyrobe-elektriny-plynem>
- Zeniewsky, Peter (2021): Despite short-term pain, the EU's liberalised gas markets have brought long-term financial gains, IEA commentary, 22 October 2021. <https://www.iea.org/commentaries/despite-short-term-pain-the-eu-s-liberalised-gas-markets-have-brought-long-term-financial-gains>

## Keywords

Natural gas, LNG, oil indexation

## JEL Classification

D40, D43, L10, Q40

## A1. Change in predictions for 2023

GDP growth, %								Inflation, %									
	CF		IMF		OECD		CB / OE			CF		IMF		OECD		CB / OE	
EA	0	2023/5	+0.1	2023/4	+0.3	2023/3	+0.5	2023/3	0	2023/5	-0.4	2023/4	-0.6	2023/3	-1.0	2023/3	
		2023/4		2023/1		2022/11		2022/12		2023/4		2022/10		2022/11		2022/12	
US	0	2023/5	+0.2	2023/4	+1.0	2023/3	-0.1	2023/3	-0.1	2023/5	+1.0	2023/4	-0.2	2023/3	+0.2	2023/3	
		2023/4		2023/1		2022/11		2022/12		2023/4		2022/10		2022/11		2022/12	
UK	+0.1	2023/5	+0.3	2023/4	+0.2	2023/3	+0.8	2023/5	+0.3	2023/5	-2.2	2023/4	+0.1	2023/3	+1.0	2023/5	
		2023/4		2023/1		2022/11		2023/2		2023/4		2022/10		2022/11		2023/2	
JP	-0.1	2023/5	-0.5	2023/4	-0.4	2023/3	-0.3	2023/4	+0.1	2023/5	+1.3	2023/4	+0.5	2023/3	+0.2	2023/4	
		2023/4		2023/1		2022/11		2023/1		2023/4		2022/10		2022/11		2023/1	
CN	+0.3	2023/5	0	2023/4	+0.7	2023/3	+0.5	2023/5	-0.4	2023/5	-0.2	2023/4	0	2023/3	-0.4	2023/5	
		2023/4		2023/1		2022/11		2023/4		2023/4		2022/10		2022/11		2023/4	
RU	+0.5	2023/4	+0.4	2023/4	+3.1	2023/3	+0.6	2023/5	-0.3	2023/4	+2.0	2023/4	-0.3	2023/3	+0.1	2023/5	
		2023/3		2023/1		2022/11		2023/4		2023/3		2022/10		2022/11		2023/4	

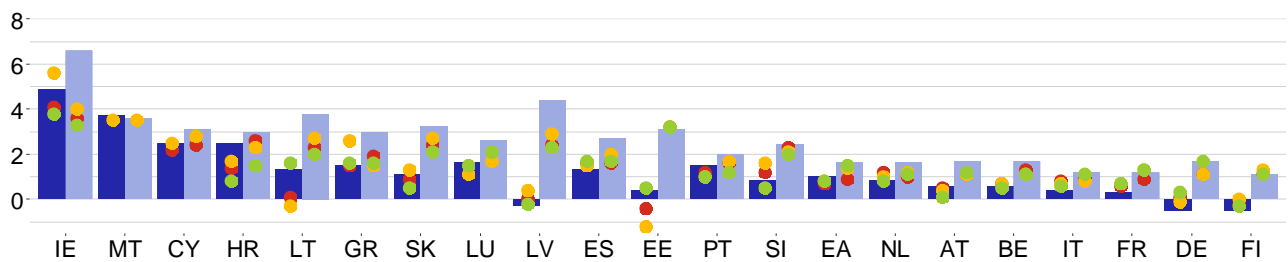
## A2. Change in predictions for 2024

GDP growth, %								Inflation, %									
	CF		IMF		OECD		CB / OE			CF		IMF		OECD		CB / OE	
EA	-0.1	2023/5	-0.2	2023/4	+0.1	2023/3	-0.3	2023/3	0	2023/5	+0.2	2023/4	-0.4	2023/3	-0.5	2023/3	
		2023/4		2023/1		2022/11		2022/12		2023/4		2022/10		2022/11		2022/12	
US	-0.1	2023/5	+0.1	2023/4	-0.1	2023/3	-0.4	2023/3	0	2023/5	+0.1	2023/4	-0.1	2023/3	0	2023/3	
		2023/4		2023/1		2022/11		2022/12		2023/4		2022/10		2022/11		2022/12	
UK	0	2023/5	+0.1	2023/4	+0.7	2023/3	+1.1	2023/5	0	2023/5	-0.7	2023/4	-0.5	2023/3	+0.8	2023/5	
		2023/4		2023/1		2022/11		2023/2		2023/4		2022/10		2022/11		2023/2	
JP	0	2023/5	+0.1	2023/4	+0.2	2023/3	+0.1	2023/4	0	2023/5	+1.2	2023/4	+0.1	2023/3	+0.2	2023/4	
		2023/4		2023/1		2022/11		2023/1		2023/4		2022/10		2022/11		2023/1	
CN	-0.2	2023/5	0	2023/4	+0.8	2023/3	+0.3	2023/5	0	2023/5	+0.3	2023/4	0	2023/3	+0.2	2023/5	
		2023/4		2023/1		2022/11		2023/4		2023/4		2022/10		2022/11		2023/4	
RU	0	2023/4	-0.8	2023/4	-0.3	2023/3	0	2023/5	0	2023/4	+0.6	2023/4	-0.8	2023/3	0	2023/5	
		2023/3		2023/1		2022/11		2023/4		2023/3		2022/10		2022/11		2023/4	

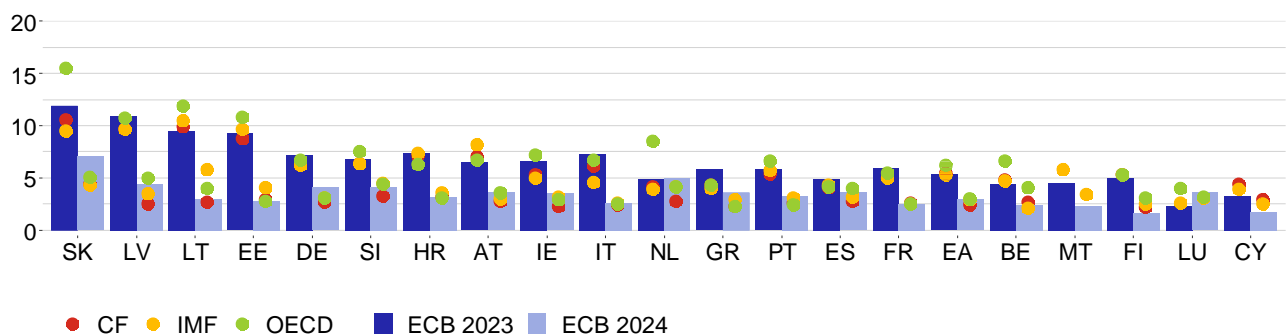


### A3. GDP growth and inflation outlooks in the euro area countries

GDP growth in the euro area countries in 2023 and 2024, %



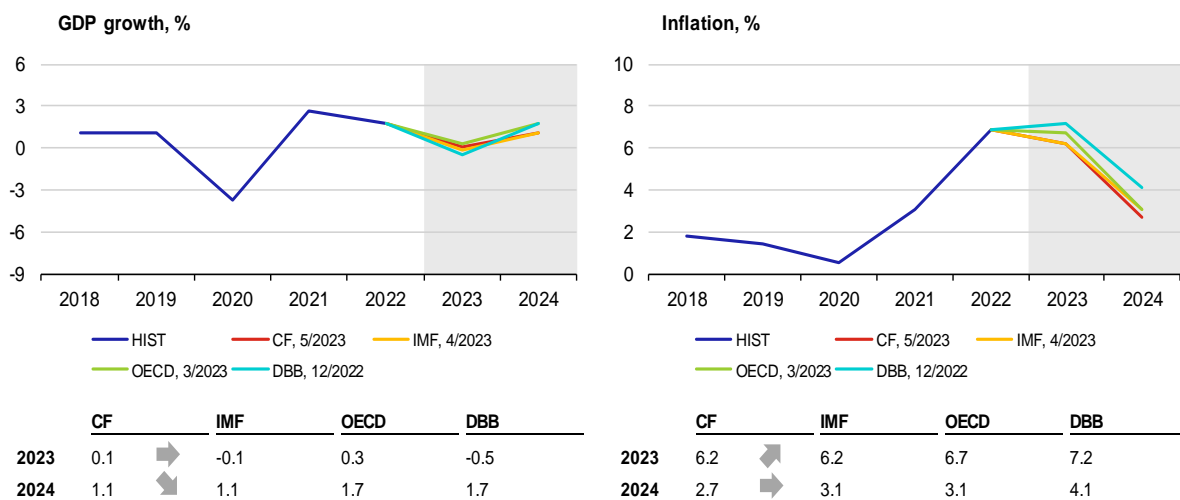
Inflation in the euro area countries in 2023 and 2024, %



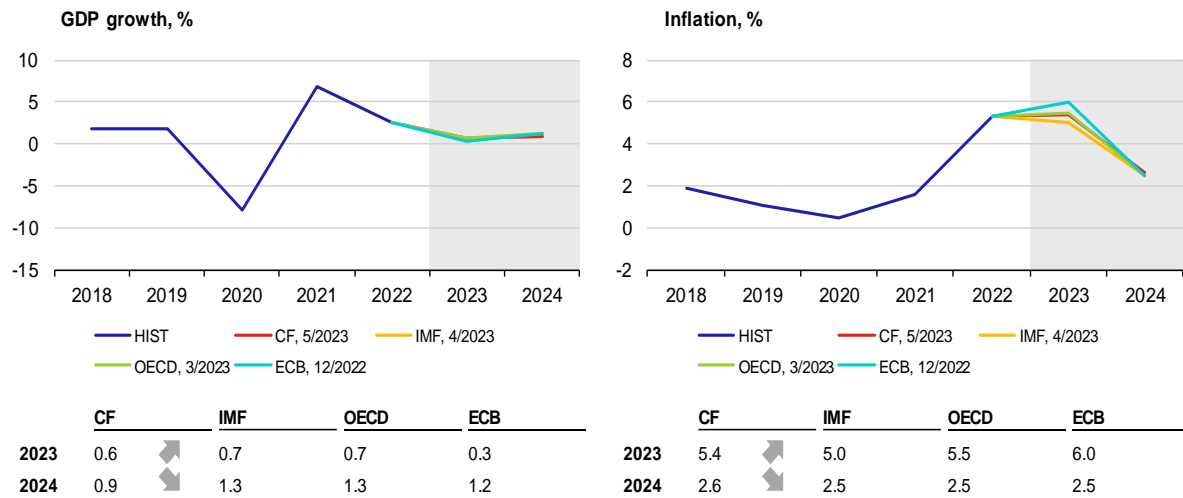
Note: Charts show institutions' latest available outlooks of for the given country.

### A4. GDP growth and inflation in the individual euro area countries

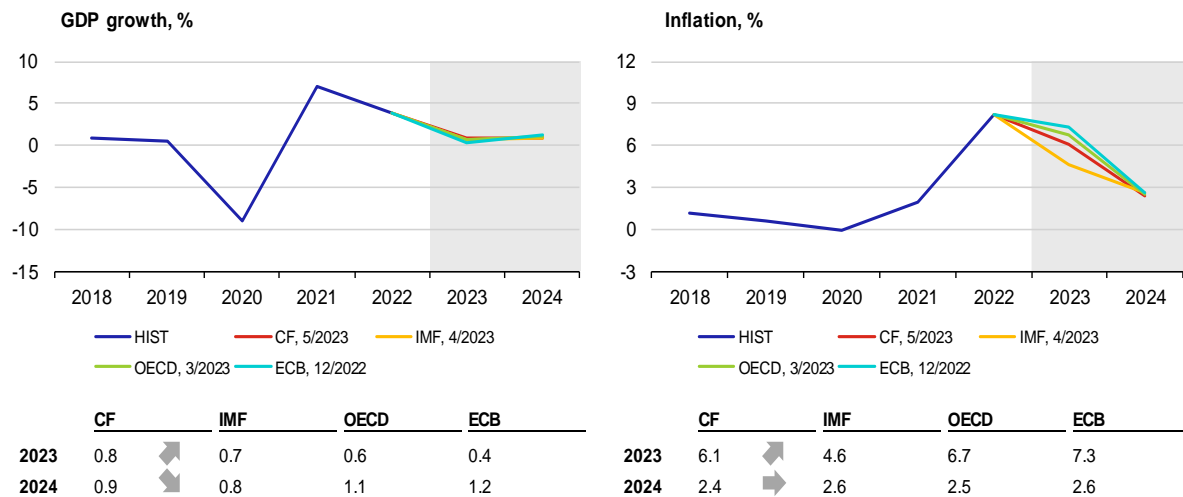
#### Germany



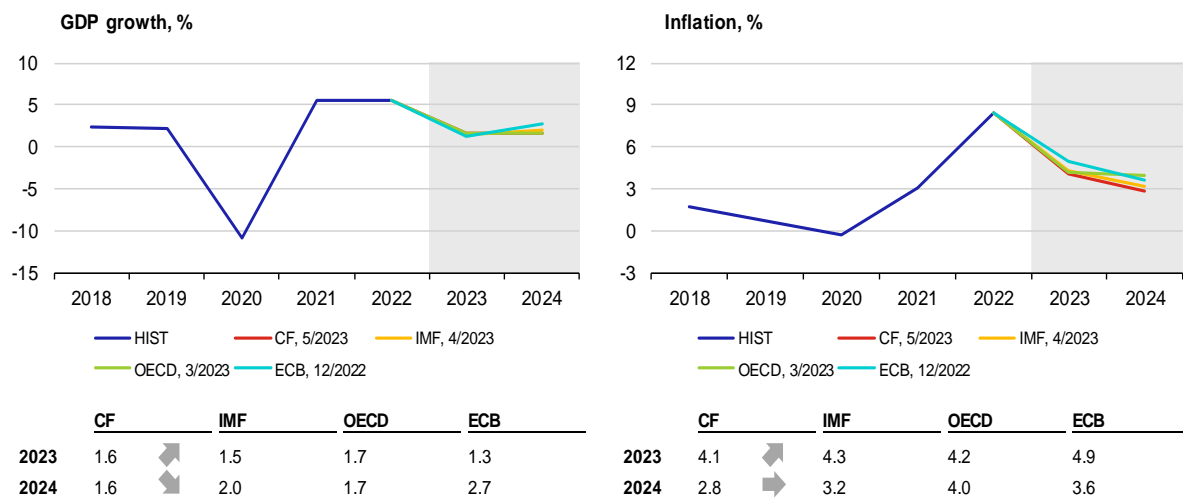
## France



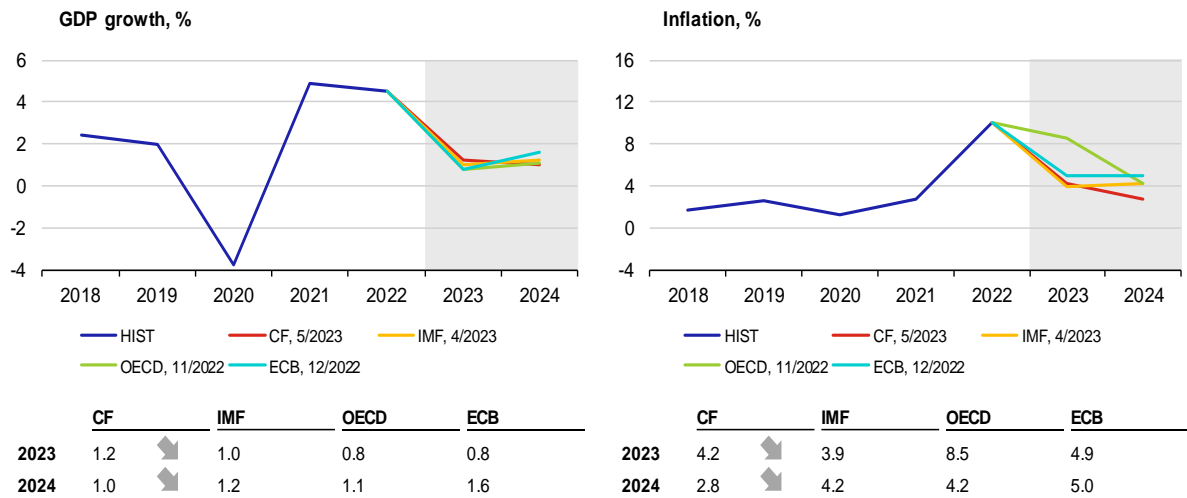
## Italy



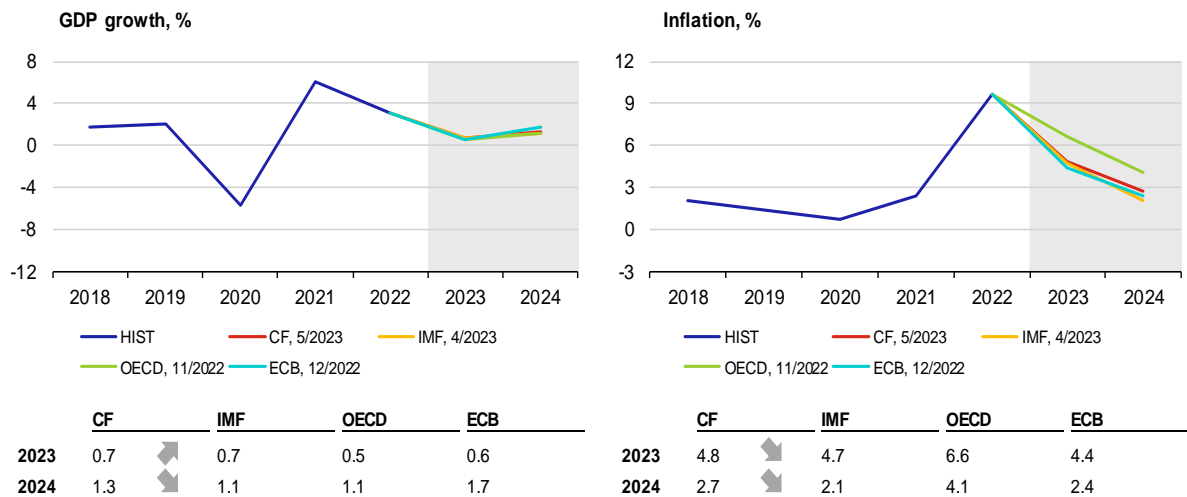
## Spain



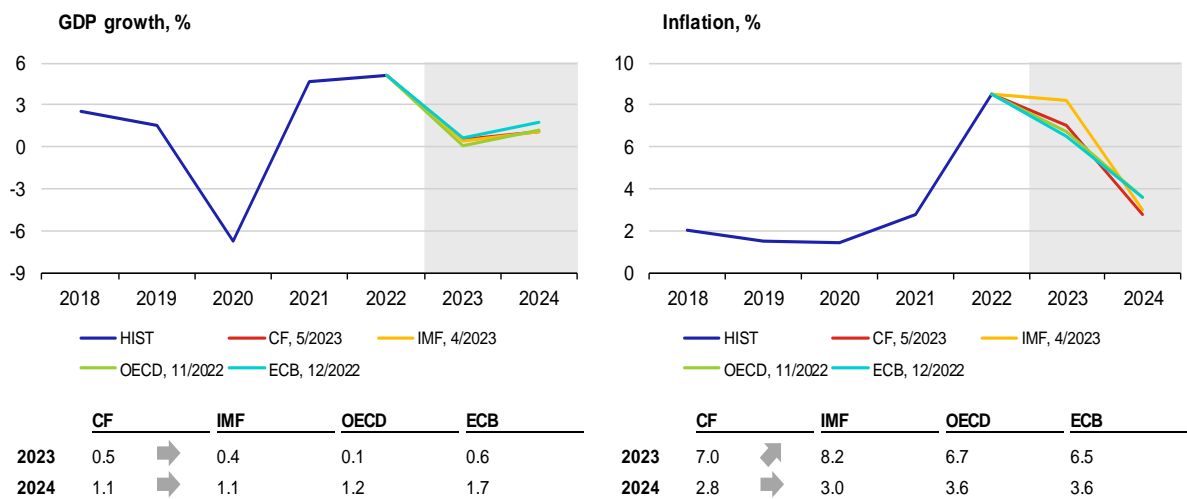
## Netherlands



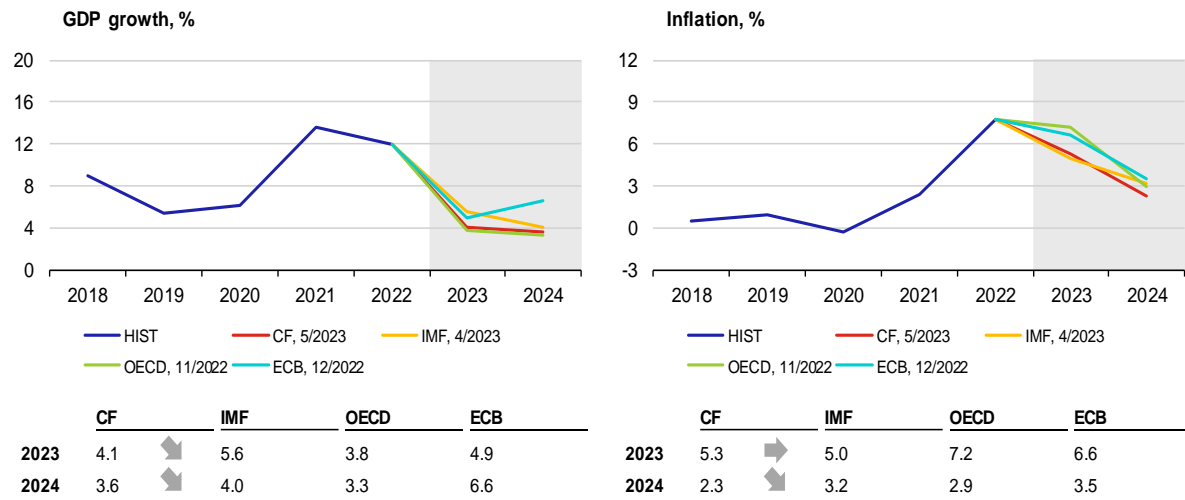
## Belgium



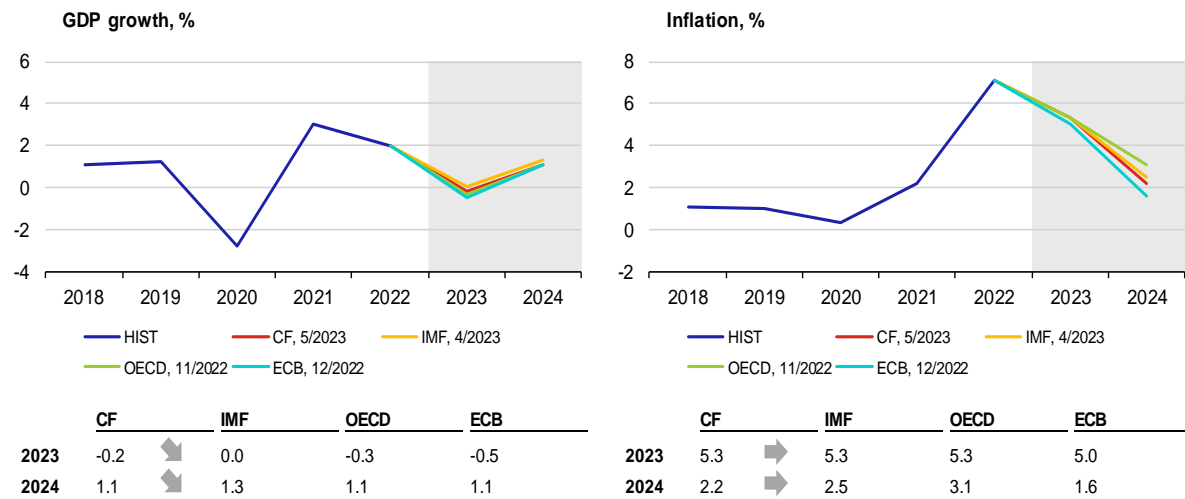
## Austria



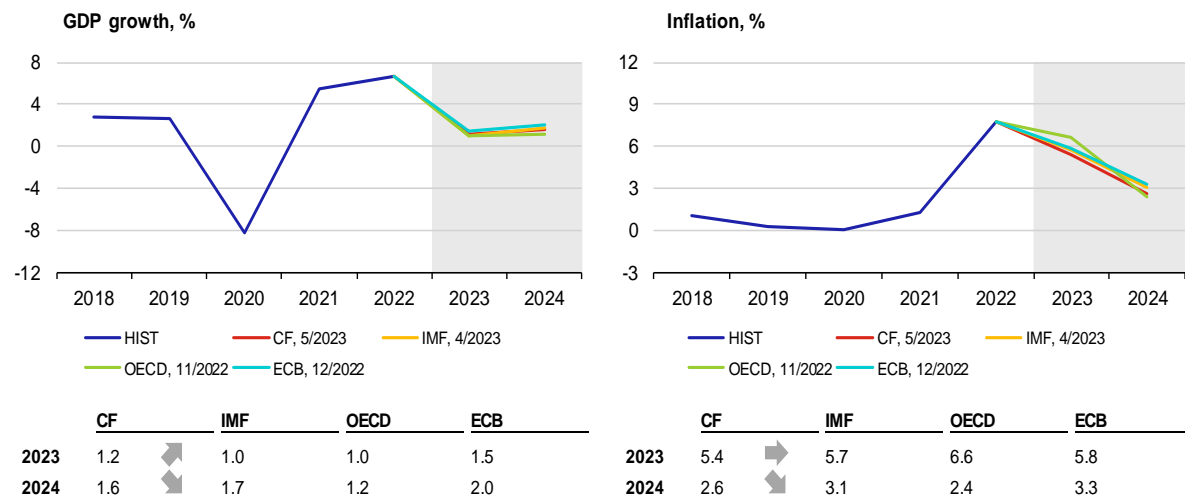
## Ireland



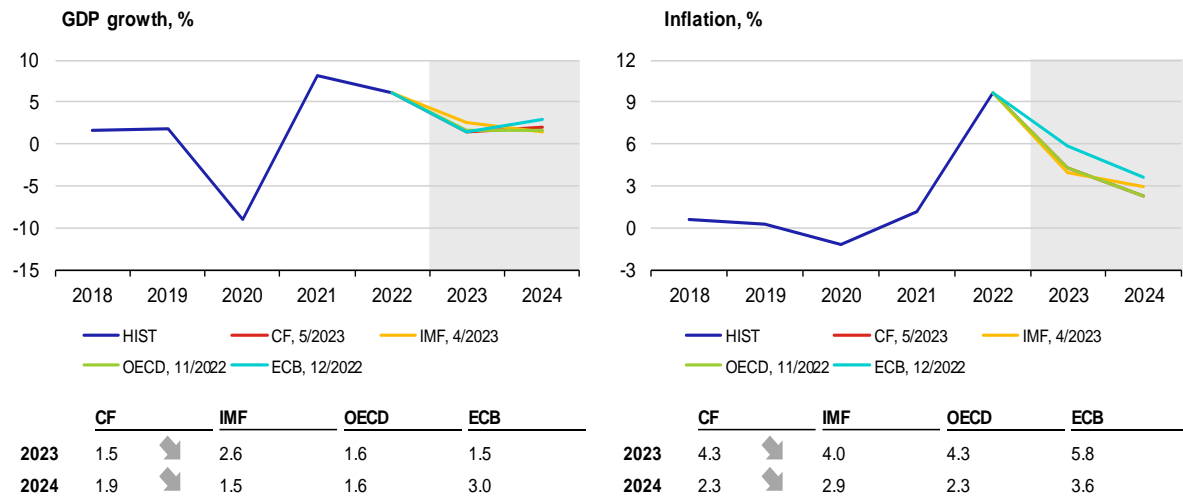
## Finland



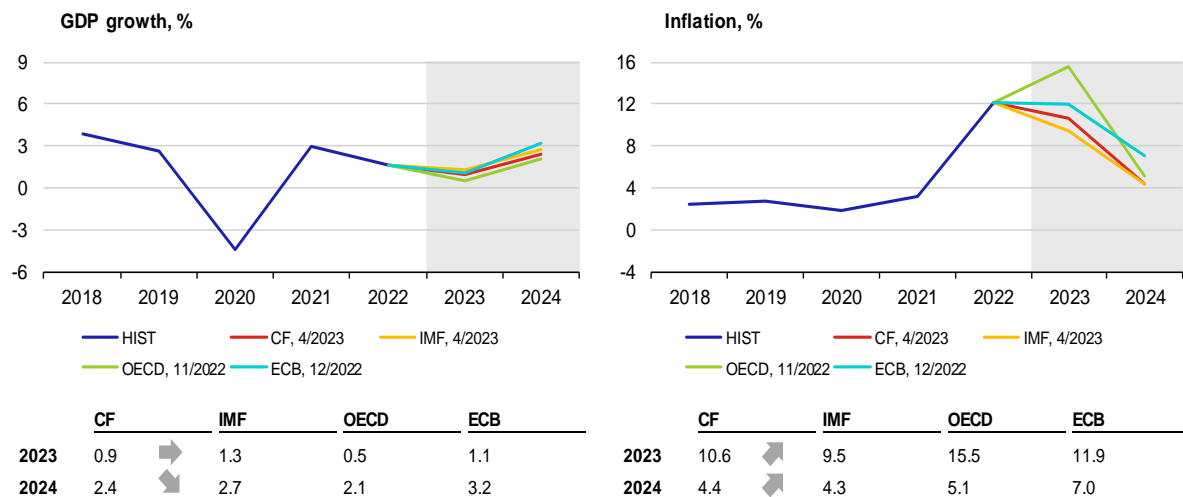
## Portugal



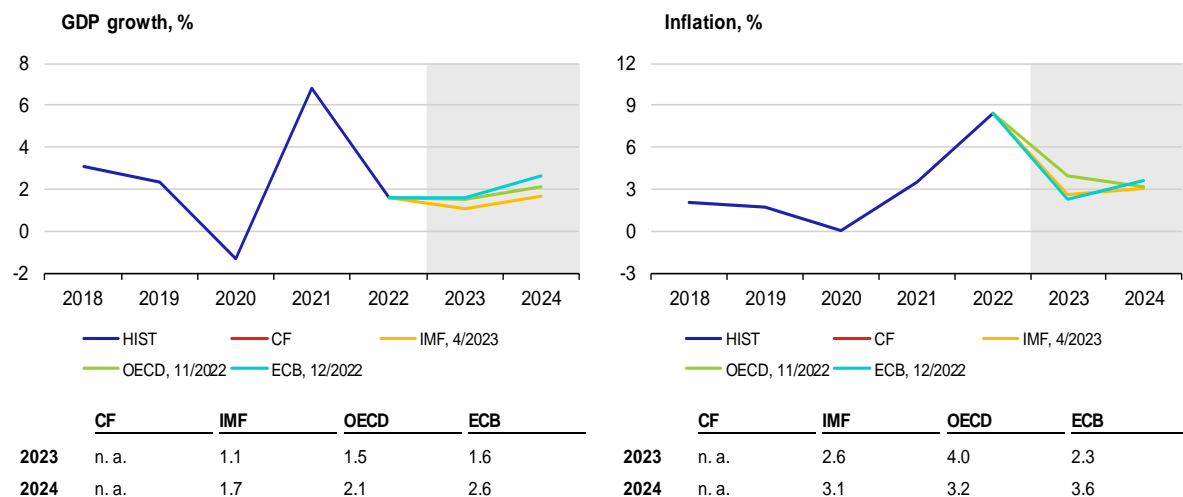
## Greece



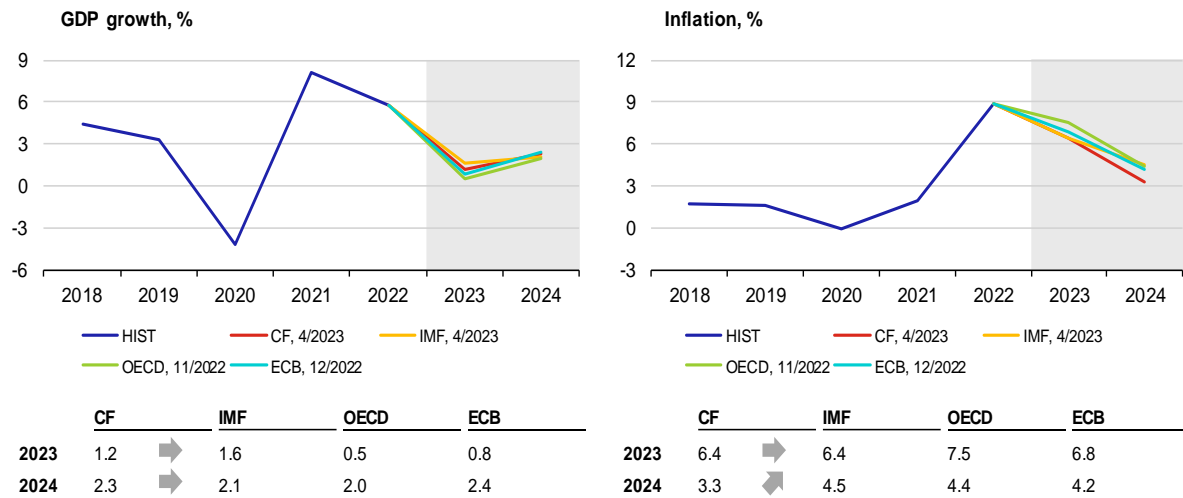
## Slovakia



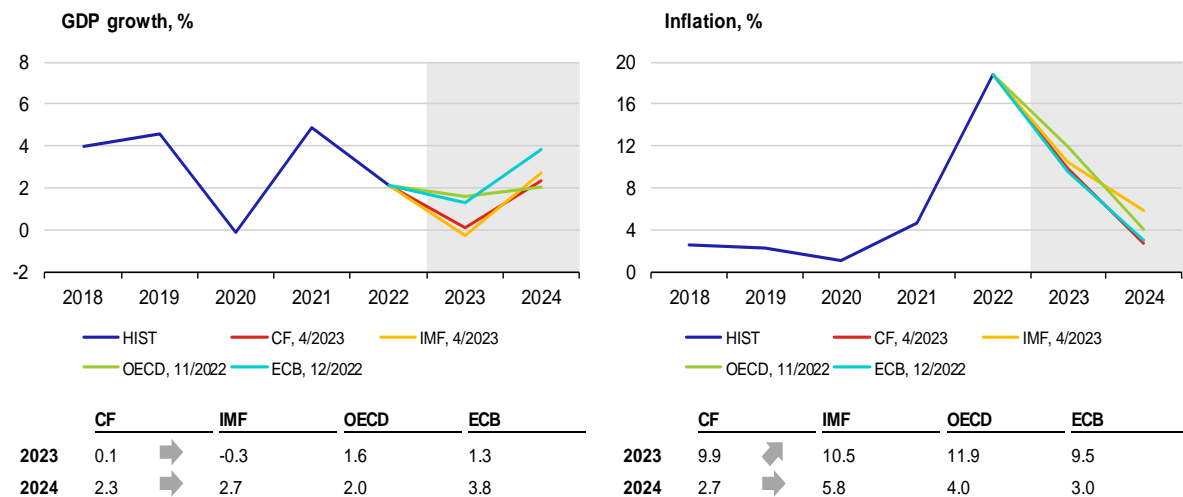
## Luxembourg



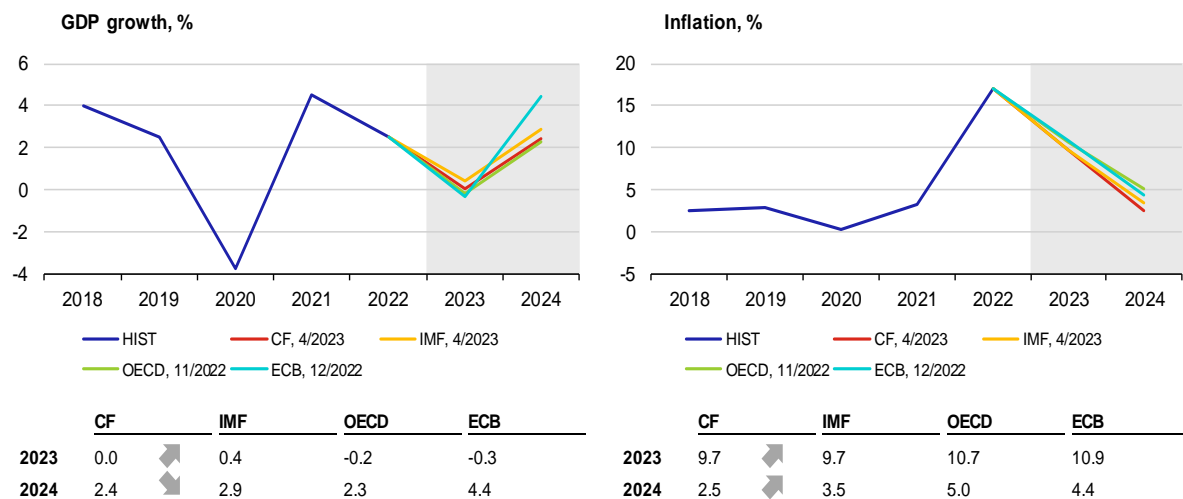
## Slovenia



## Lithuania

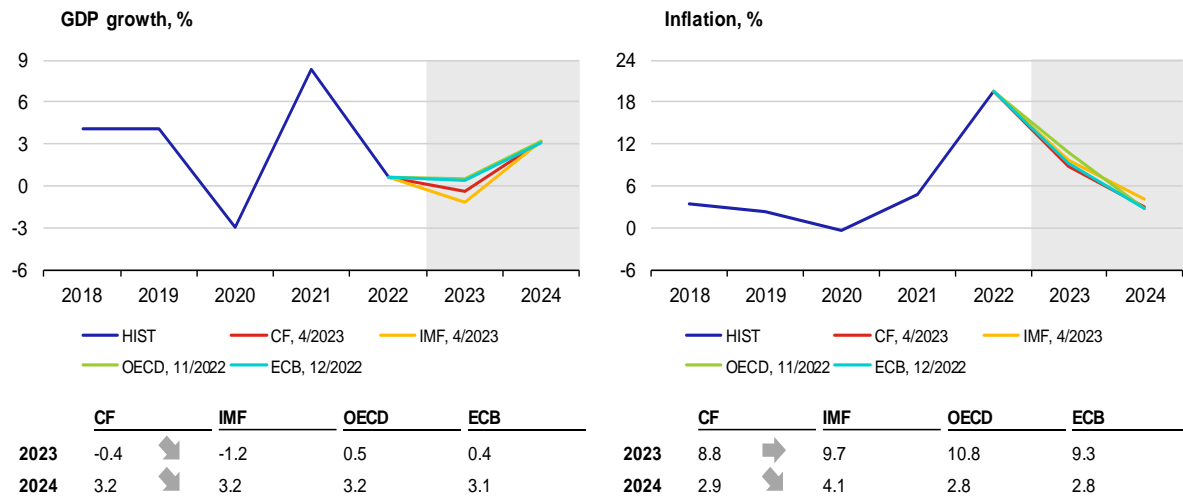


## Latvia

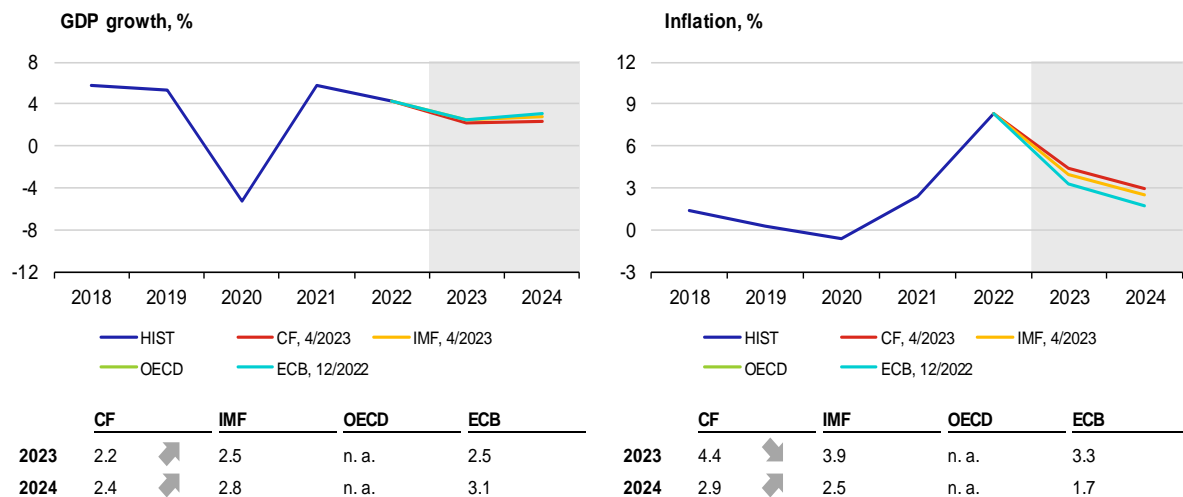




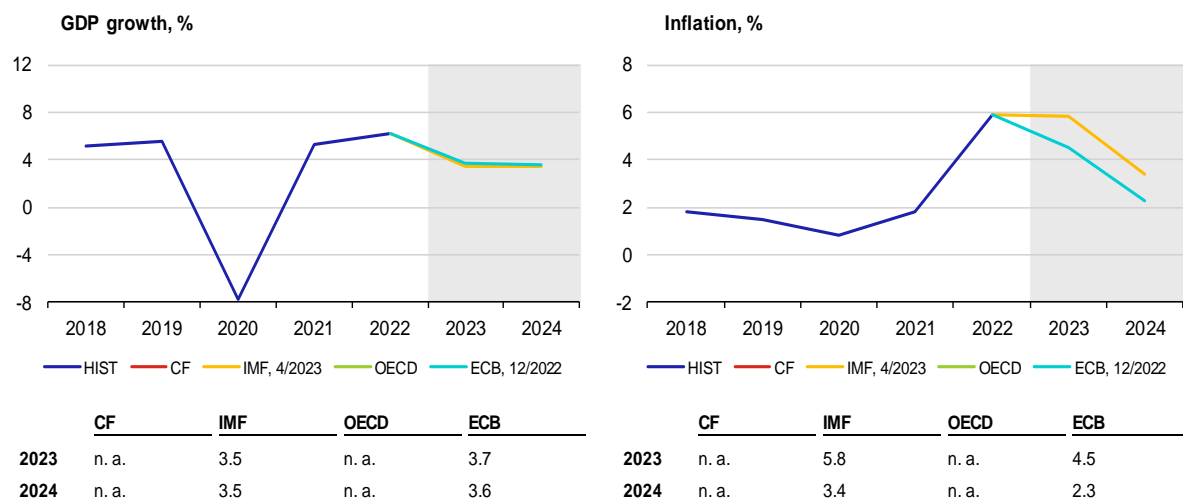
## Estonia



## Cyprus

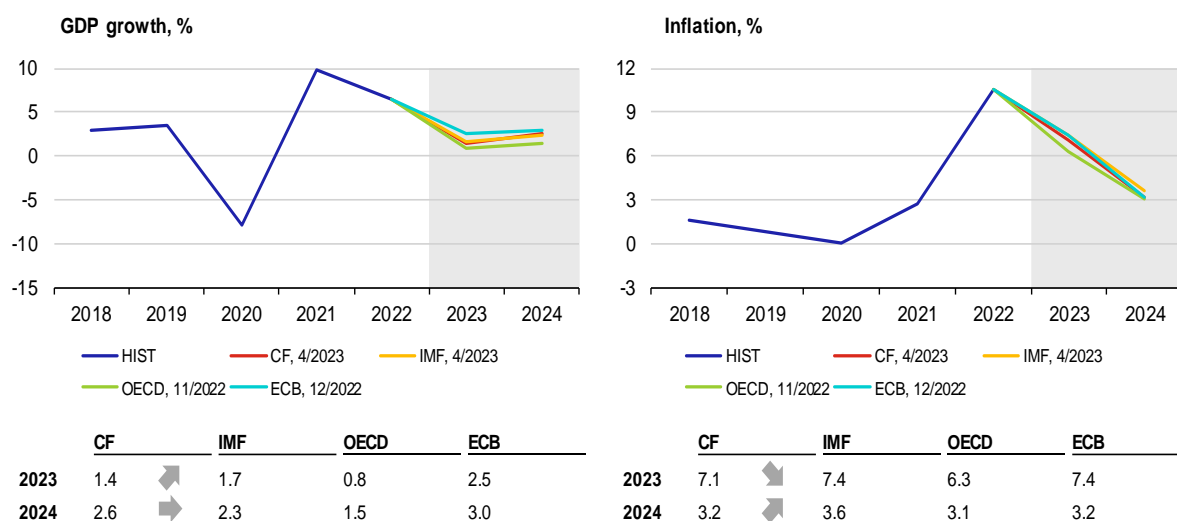


## Malta



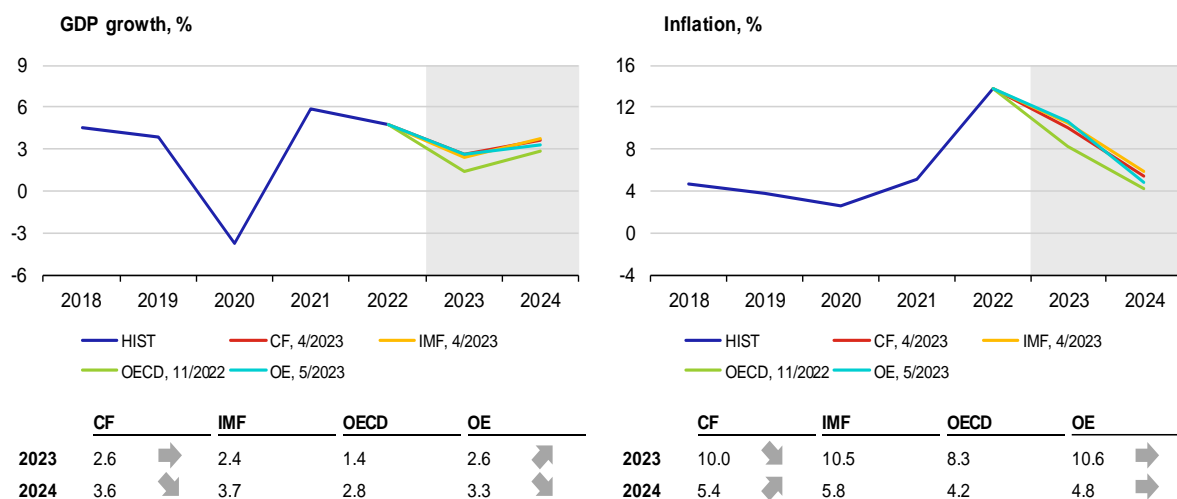
Ddd

## Croatia



## A5. GDP growth and inflation in other selected countries

## Romania



## A6. List of abbreviations

<b>AT</b>	Austria	<b>IRS</b>	Interest Rate swap
<b>bbl</b>	barrel	<b>ISM</b>	Institute for Supply Management
<b>BE</b>	Belgium	<b>IT</b>	Italy
<b>BoE</b>	Bank of England (the UK central bank)	<b>JP</b>	Japan
<b>BoJ</b>	Bank of Japan (the central bank of Japan)	<b>JPY</b>	Japanese yen
<b>bp</b>	basis point (one hundredth of a percentage point)	<b>LIBOR</b>	London Interbank Offered Rate
<b>CB</b>	central bank	<b>LME</b>	London Metal Exchange
<b>CBR</b>	Central Bank of Russia	<b>LT</b>	Lithuania
<b>CF</b>	Consensus Forecasts	<b>LU</b>	Luxembourg
<b>CN</b>	China	<b>LV</b>	Latvia
<b>CNB</b>	Czech National Bank	<b>MKT</b>	Markit
<b>CNY</b>	Chinese renminbi	<b>MNB</b>	Magyar Nemzeti Bank (the central bank of Hungary)
<b>ConfB</b>	Conference Board Consumer Confidence Index	<b>MT</b>	Malta
<b>CXN</b>	Caixin	<b>NBP</b>	Narodowy Bank Polski (the central bank of Poland)
<b>CY</b>	Cyprus	<b>NIESR</b>	National Institute of Economic and Social Research (UK)
<b>DBB</b>	Deutsche Bundesbank (the central bank of Germany)	<b>NKI</b>	Nikkei
<b>DE</b>	Germany	<b>NL</b>	Netherlands
<b>EA</b>	euro area	<b>OE</b>	Oxford Economics
<b>ECB</b>	European Central Bank	<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>EE</b>	Estonia	<b>OECD-CLI</b>	OECD Composite Leading Indicator
<b>EIA</b>	Energy Information Administration	<b>OPEC+</b>	member countries of OPEC oil cartel and 10 other oil-exporting countries (the most important of which are Russia, Mexico and Kazakhstan)
<b>ES</b>	Spain	<b>PMI</b>	Purchasing Managers' Index
<b>ESI</b>	Economic Sentiment Indicator of the European Commission	<b>PP</b>	percentage point
<b>EU</b>	European Union	<b>PT</b>	Portugal
<b>EUR</b>	euro	<b>RU</b>	Russia
<b>EURIBOR</b>	Euro Interbank Offered Rate	<b>RUB</b>	Russian rouble
<b>Fed</b>	Federal Reserve System (the US central bank)	<b>SI</b>	Slovenia
<b>FI</b>	Finland	<b>SK</b>	Slovakia
<b>FOMC</b>	Federal Open Market Committee	<b>SPF</b>	Survey of Professional Forecasters
<b>FR</b>	France	<b>TTF</b>	Title Transfer Facility (virtual trading point for natural gas in the Netherlands)
<b>FRA</b>	forward rate agreement	<b>UK</b>	United Kingdom
<b>FY</b>	fiscal year	<b>UoM</b>	University of Michigan Consumer Sentiment Index - present situation
<b>GBP</b>	pound sterling	<b>US</b>	United States
<b>GDP</b>	gross domestic product	<b>USD</b>	US dollar
<b>GR</b>	Greece	<b>WEO</b>	World Economic Outlook
<b>HICP</b>	Harmonised Index of Consumer Prices	<b>WTI</b>	West Texas Intermediate (crude oil used as a benchmark in oil pricing)
<b>HR</b>	Croatia	<b>ZEW</b>	Centre for European Economic Research
<b>ICE</b>	Intercontinental Exchange		
<b>IE</b>	Ireland		
<b>IEA</b>	International Energy Agency		
<b>IFO</b>	Leibniz Institute for Economic Research at the University of Munich		
<b>IMF</b>	International Monetary Fund		

Publisher:  
ČESKÁ NÁRODNÍ BANKA  
Na Příkopě 28  
115 03 Praha 1  
Česká republika

Contact:  
ODBOR KOMUNIKACE SEKCE KANCELÁŘ  
Tel.: 224 413 112  
Fax: 224 412 179  
[www.cnb.cz](http://www.cnb.cz)